

SEQUENCE LISTING

<110> Young, James
Kiener, Peter
Osterhaus, Albertus
Fouchier, Ronaldus

<120> METHODS OF TREATING AND PREVENTING RSV, HMPV, AND PIV USING ANTI-RSV, ANTI-HMPV, AND ANTI-PIV ANTIBODIES

<130> 10271-072-999

<140> To be assigned
<141> Herewith

<150> 60/398,475
<151> 2002-07-25

<160> 437

<170> FastSEQ for Windows Version 4.0

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<212> DNA
<213> metapneumovirus

<220>
<221> CDS
<222> (1)...(2507)
<223> Human metapneumovirus isolate 00-1 matrix protein
(M) and fusion protein (F) genes

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<211> 1596
<212> DNA
<213> pneumovirus

<220>
<221> CDS
<222> (1)...(1596)
<223> Avian pneumovirus fusion protein gene, partial cds

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gggttagcga tagccaagac aattaggcta gaaggagaag tggctgcaat caaagggtgc当地 420
ctcaggaaaaa caaatgaggc tggatctaca ttaggaaatg gc当地 gaggggt acttgcaaca 480
gctgtgaatg atctcaagga ctttataagt aaaaaattga cacctgcaat aaacagggaa 540
aagtgtgaca tctcagaccc taagatggca gtgagctttg gacaataca tc当地 gaggttc 600
ctcaatgtgg taagacagtt ttctgacaat gc当地 ggttata cgc当地 tcaat atctcttagat 660
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ggagttatg gtagctctgt ggtctatata gtgc当地 ctccatcg tggatctat 840
acaccgtgtt ggagggtgaa ggctgctcca ttatgttca gggaaagacgg gaattatgca 900
tgtctcttc当地 gagaggacca aggttggat tggatccac agtttattat 960
ccaaatgagg aggactgtga agtaagaagt gatcatgtgt tttgtgacac agcagctgg 1020
ataaaatgttag caaaggagtc agaagagtc aacaggaata tctcaacaac aaagtaccct 1080
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agacctttgg gggaaagggtg ttc当地 acatc agcaatcaag atgctgacac tggatataatt 1260
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gatcagggtt ttggaaagggtt tgagaagagt cagaatctga tagaccagtc aaacaagata 1440
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cccaaattcc caatggaaat gaatgggttg aacaac 1596

<210> 3
<211> 1666
<212> DNA
<213> pneumovirus

<220>
<221> CDS
<222> (14)...(1627)
<223> Avian pneumovirus isolate 1b fusion protein mRNA,
complete cds

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 gagtgttttg aggacaggat ggtatacataa tgtgttcaca cttgagggtt gagatgtgga 180
 aaatctcaca tgtaccgacg ggcccagctt aataagaaca gaacttgaac tgacaaaaaaaa 240
 tgcacttgag gaactcaaga cagtatcagc agatcaattt gcaaaaggaag ctaggataat 300
 gtcaccaaga aaagcccggt ttgttctggg tgccatagca ttaggtgtgg caactgctgc 360
 tgctgtgacg gctgggtgttag cgatagccaa gacaatttagg ctagaaggag aagtggctgc 420
 aatcaagggt ggcgctcaggaa aacaaaatga ggctgtatct acatttaggaa atggcgtag 480
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 aatatctcta gatttaatga ctgacgctga gcttgttaaga gctgttaagca acatgcccac 720
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 cccttaattt tagttattaa aaaaaaaaaaaa aaaaaaaaaaaa aaaaaaaaaaaa 1666

<210> 4
<211> 1636
<212> DNA
<213> rhinotracheitis virus

<220>
<221> CDS
<222> (13)...(1629)
<223> Turkey rhinotracheitis virus gene for fusion
protein (F1 and F2 subunits), complete cds

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aacatcaactt gcaatgatgg acccagccta attgacactg agtttagtact cacaagaat 240
gctttgaggg agctcaaaac agtgtcagct gatcaagtgg ctaaggaaag cagactatcc 300
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attaagaatg ccctccggaa cacaatgag gcagtatcca cattagggaa tggtgtgagg 480
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attaaccaga acaaatgcaa tatagcagat ataaagatgg caatttagttt tggccaaaat 600
aacagaaggt tcctgaatgt ggtgaggcaa ttctctgata gtgcaggtat cacatcagct 660
gtgtctcttg atttaatgac agatgatgaa cttgttagag caattaacag aatgccaact 720
tcatcaqqac agatttaactt qatgttgaac aatcgtgcca tggttagaag gaaggggttt 780

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<211> 1860
<212> DNA
<213> pneumovirus
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<220>
<221> CDS
<222> (1)...(110)
<223> Avian pneumovirus matrix protein (M) gene, partial
 cds

<220>
<221> CDS
<222> (216)...(1829)
<223> Avian pneumovirus fusion glycoprotein (F) gene,
complete cds

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gtgtcttctt tgtggtaag aagagaaaag ctgctccaa attcccaatg gaaatgaatg 1800
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<211> 574
<212> PRT
<213> paramyxovirus

<220>
<223> paramyxovirus F protein hRSV B

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Tyr Gln Ser Thr Cys Ser Ala Val Ser Arg Gly Tyr Phe Ser Ala Leu
35 40 45
Arg Thr Gly Trp Tyr Thr Ser Val Ile Thr Ile Glu Leu Ser Asn Ile
50 55 60
Lys Glu Thr Lys Cys Asn Gly Thr Asp Thr Lys Val Lys Leu Ile Lys
65 70 75 80
Gln Glu Leu Asp Lys Tyr Lys Asn Ala Val Thr Glu Leu Gln Leu Leu
85 90 95
Met Gln Asn Thr Pro Ala Ala Asn Asn Arg Ala Arg Arg Glu Ala Pro
100 105 110
Gln Tyr Met Asn Tyr Thr Ile Asn Thr Thr Lys Asn Leu Asn Val Ser
115 120 125
Ile Ser Lys Lys Arg Lys Arg Arg Phe Leu Gly Phe Leu Leu Gly Val
130 135 140
Gly Ser Ala Ile Ala Ser Gly Ile Ala Val Ser Lys Val Leu His Leu
145 150 155 160
Glu Gly Glu Val Asn Lys Ile Lys Asn Ala Leu Leu Ser Thr Asn Lys
165 170 175
Ala Val Val Ser Leu Ser Asn Gly Val Ser Val Leu Thr Ser Lys Val
180 185 190
Leu Asp Leu Lys Asn Tyr Ile Asn Asn Gln Leu Leu Pro Ile Val Asn
195 200 205
Gln Gln Ser Cys Arg Ile Ser Asn Ile Glu Thr Val Ile Glu Phe Gln
210 215 220
Gln Lys Asn Ser Arg Leu Leu Glu Ile Asn Arg Glu Phe Ser Val Asn
225 230 235 240
Ala Gly Val Thr Thr Pro Leu Ser Thr Tyr Met Leu Thr Asn Ser Glu
245 250 255
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260 265 270
Leu Met Ser Ser Asn Val Gln Ile Val Arg Gln Gln Ser Tyr Ser Ile
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Met Ser Ile Ile Lys Glu Glu Val Leu Ala Tyr Val Val Gln Leu Pro
290 295 300
Ile Tyr Gly Val Ile Asp Thr Pro Cys Trp Lys Leu His Thr Ser Pro
305 310 315 320
Leu Cys Thr Thr Asn Ile Lys Glu Gly Ser Asn Ile Cys Leu Thr Arg
325 330 335
Thr Asp Arg Gly Trp Tyr Cys Asp Asn Ala Gly Ser Val Ser Phe Phe
340 345 350
Pro Gln Ala Asp Thr Cys Lys Val Gln Ser Asn Arg Val Phe Cys Asp
355 360 365

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Tyr	Gly	Lys	Thr	Lys	Cys	Thr	Ala	Ser	Asn	Lys	Asn	Arg	Gly	Ile	Ile
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Lys	Thr	Phe	Ser	Asn	Gly	Cys	Asp	Tyr	Val	Ser	Asn	Lys	Gly	Val	Asp
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Lys	Asn	Leu	Tyr	Val	Lys	Gly	Glu	Pro	Ile	Ile	Asn	Tyr	Tyr	Asp	Pro
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Leu	His	Asn	Val	Asn	Thr	Gly	Lys	Ser	Thr	Thr	Asn	Ile	Met	Ile	Thr
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Gly	Leu	Leu	Leu	Tyr	Cys	Lys	Ala	Lys	Asn	Thr	Pro	Val	Thr	Leu	Ser
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 <212> PRT
 <213> paramyxovirus

<220>
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Tyr	Gln	Ser	Thr	Cys	Ser	Ala	Val	Ser	Lys	Gly	Tyr	Leu	Ser	Ala	Leu
					35				40			45			
Arg	Thr	Gly	Trp	Tyr	Thr	Ser	Val	Ile	Thr	Ile	Glu	Leu	Ser	Asn	Ile
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Lys	Glu	Asn	Lys	Cys	Asn	Gly	Thr	Asp	Ala	Lys	Val	Lys	Leu	Ile	Lys
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Gln	Glu	Leu	Asp	Lys	Tyr	Lys	Asn	Ala	Val	Thr	Glu	Leu	Gln	Leu	Leu
					85				90			95			
Met	Gln	Ser	Thr	Pro	Pro	Thr	Asn	Asn	Arg	Ala	Arg	Arg	Glu	Leu	Pro
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Arg	Phe	Met	Asn	Tyr	Thr	Leu	Asn	Asn	Ala	Lys	Lys	Thr	Asn	Val	Thr
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Leu	Ser	Lys	Lys	Arg	Arg	Phe	Leu	Gly	Phe	Leu	Leu	Gly	Val		
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Gly	Ser	Ala	Ile	Ala	Ser	Gly	Val	Ala	Val	Ser	Lys	Val	Leu	His	Leu
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Glu	Gly	Glu	Val	Asn	Lys	Ile	Lys	Ser	Ala	Leu	Leu	Ser	Thr	Asn	Lys
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Ala	Val	Val	Ser	Leu	Ser	Asn	Gly	Val	Ser	Val	Leu	Thr	Ser	Lys	Val

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Leu Asp Leu Lys Asn Tyr Ile Asp Lys Gln Leu Leu Pro Ile Val Asn		
195	200	205
Lys Gln Ser Cys Ser Ile Ser Asn Ile Glu Thr Val Ile Glu Phe Gln		
210	215	220
Gln Lys Asn Asn Arg Leu Leu Glu Ile Thr Arg Glu Phe Ser Val Asn		
225	230	235
Ala Gly Val Thr Thr Pro Val Ser Thr Tyr Met Leu Thr Asn Ser Glu		
245	250	255
Leu Leu Ser Leu Ile Asn Asp Met Pro Ile Thr Asn Asp Gln Lys Lys		
260	265	270
Leu Met Ser Asn Asn Val Gln Ile Val Arg Gln Ser Tyr Ser Ile		
275	280	285
Met Ser Ile Ile Lys Glu Glu Val Leu Ala Tyr Val Val Gln Leu Pro		
290	295	300
Leu Tyr Gly Val Ile Asp Thr Pro Cys Trp Lys Leu His Thr Ser Pro		
305	310	315
Leu Cys Thr Thr Asn Thr Lys Glu Gly Ser Asn Ile Cys Leu Thr Arg		
325	330	335
Thr Asp Arg Gly Trp Tyr Cys Asp Asn Ala Gly Ser Val Ser Phe Phe		
340	345	350
Pro Gln Ala Glu Thr Cys Lys Val Gln Ser Asn Arg Val Phe Cys Asp		
355	360	365
Thr Met Asn Ser Leu Thr Leu Pro Ser Glu Ile Asn Leu Cys Asn Val		
370	375	380
Asp Ile Phe Asn Pro Lys Tyr Asp Cys Lys Ile Met Thr Ser Lys Thr		
385	390	395
Asp Val Ser Ser Val Ile Thr Ser Leu Gly Ala Ile Val Ser Cys		
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Tyr Gly Lys Thr Lys Cys Thr Ala Ser Asn Lys Asn Arg Gly Ile Ile		
420	425	430
Lys Thr Phe Ser Asn Gly Cys Asp Tyr Val Ser Asn Lys Gly Met Asp		
435	440	445
Thr Val Ser Val Gly Asn Thr Leu Tyr Tyr Val Asn Lys Gln Glu Gly		
450	455	460
Lys Ser Leu Tyr Val Lys Gly Glu Pro Ile Ile Asn Phe Tyr Asp Pro		
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Leu Val Phe Pro Ser Asp Glu Phe Asp Ala Ser Ile Ser Gln Val Asn		
485	490	495
Glu Lys Ile Asn Gln Ser Leu Ala Phe Ile Arg Lys Ser Asp Glu Leu		
500	505	510
Leu His Asn Val Asn Ala Gly Lys Ser Thr Thr Asn Ile Met Ile Thr		
515	520	525
Thr Ile Ile Ile Val Ile Ile Val Ile Leu Leu Ser Leu Ile Ala Val		
530	535	540
Gly Leu Leu Leu Tyr Cys Lys Ala Arg Ser Thr Pro Val Thr Leu Ser		
545	550	555
Lys Asp Gln Leu Ser Gly Ile Asn Asn Ile Ala Phe Ser Asn		
565	570	

<210> 8
<211> 121
<212> PRT
<213> metapneumovirus

<220>
<223> human metapneumovirus01-71 (partial sequence)

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35 40 45

Thr Cys Ala Asp Gly Pro Ser Leu Ile Lys Thr Glu Leu Asp Leu Thr
50 55 60
Lys Ser Ala Leu Arg Glu Leu Arg Thr Val Ser Ala Asp Gln Leu Ala
65 70 75 80
Arg Glu Glu Gln Ile Glu Asn Pro Arg Gln Ser Arg Phe Val Leu Gly
85 90 95
Ala Ile Ala Leu Gly Val Ala Thr Ala Ala Ala Val Thr Ala Gly Val
100 105 110
Ala Ile Ala Lys Thr Ile Arg Leu Glu
115 120

<210> 9

<211> 539

<212> PRT

<213> metapneumovirus

<220>

<223> Human metapneumovirus isolate 00-1 matrix protein
(M) and fusion protein (F) genes

<400> 9

Met Ser Trp Lys Val Val Ile Ile Phe Ser Leu Leu Ile Thr Pro Gln
1 5 10 15
His Gly Leu Lys Glu Ser Tyr Leu Glu Ser Cys Ser Thr Ile Thr
20 25 30
Glu Gly Tyr Leu Ser Val Leu Arg Thr Gly Trp Tyr Thr Asn Val Phe
35 40 45
Thr Leu Glu Val Gly Asp Val Glu Asn Leu Thr Cys Ala Asp Gly Pro
50 55 60
Ser Leu Ile Lys Thr Glu Leu Asp Leu Thr Lys Ser Ala Leu Arg Glu
65 70 75 80
Leu Arg Thr Val Ser Ala Asp Gln Leu Ala Arg Glu Glu Gln Ile Glu
85 90 95
Asn Pro Arg Gln Ser Arg Phe Val Leu Gly Ala Ile Ala Leu Gly Val
100 105 110
Ala Thr Ala Ala Ala Val Thr Ala Gly Val Ala Ile Lys Thr Ile
115 120 125
Arg Leu Glu Ser Glu Val Thr Ala Ile Lys Asn Ala Leu Lys Lys Thr
130 135 140
Asn Glu Ala Val Ser Thr Leu Gly Asn Gly Val Arg Val Leu Ala Thr
145 150 155 160
Ala Val Arg Glu Leu Lys Asp Phe Val Ser Lys Asn Leu Thr Arg Ala
165 170 175
Ile Asn Lys Asn Lys Cys Asp Ile Ala Asp Leu Lys Met Ala Val Ser
180 185 190
Phe Ser Gln Phe Asn Arg Arg Phe Leu Asn Val Val Arg Gln Phe Ser
195 200 205
Asp Asn Ala Gly Ile Thr Pro Ala Ile Ser Leu Asp Leu Met Thr Asp
210 215 220
Ala Glu Leu Ala Arg Ala Val Ser Asn Met Pro Thr Ser Ala Gly Gln
225 230 235 240
Ile Lys Leu Met Leu Glu Asn Arg Ala Met Val Arg Arg Lys Gly Phe
245 250 255
Gly Phe Leu Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln

260	265	270
Leu Pro Ile Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala		
275	280	285
Ala Pro Ser Cys Ser Gly Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg		
290	295	300
Glu Asp Gln Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr		
305	310	315
Pro Asn Glu Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp		
325	330	335
Thr Ala Ala Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile		
340	345	350
Asn Ile Ser Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His		
355	360	365
Pro Ile Ser Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys		
370	375	380
Tyr Lys Gly Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile		
385	390	395
Lys Gln Leu Asn Lys Gly Cys Ser Tyr Ile Thr Asn Gln Asp Ala Asp		
405	410	415
Thr Val Thr Ile Asp Asn Thr Val Tyr Gln Leu Ser Lys Val Glu Gly		
420	425	430
Glu Gln His Val Ile Lys Gly Arg Pro Val Ser Ser Phe Asp Pro		
435	440	445
Val Lys Phe Pro Glu Asp Gln Phe Asn Val Ala Leu Asp Gln Val Phe		
450	455	460
Glu Ser Ile Glu Asn Ser Gln Ala Leu Val Asp Gln Ser Asn Arg Ile		
465	470	475
Leu Ser Ser Ala Glu Lys Gly Asn Thr Gly Phe Ile Ile Val Ile Ile		
485	490	495
Leu Ile Ala Val Leu Gly Ser Thr Met Ile Leu Val Ser Val Phe Ile		
500	505	510
Ile Ile Lys Lys Thr Lys Arg Pro Thr Gly Ala Pro Pro Glu Leu Ser		
515	520	525
Gly Val Thr Asn Asn Gly Phe Ile Pro His Asn		
530	535	

<210> 10
 <211> 532
 <212> PRT
 <213> Avian pneumovirus

<220>
 <223> Avian pneumovirus fusion protein gene, partial cds

<400> 10		
Met Ser Trp Lys Val Val Leu Leu Val Leu Leu Ala Thr Pro Thr		
1	5	10
Gly Gly Leu Glu Glu Ser Tyr Leu Glu Ser Cys Ser Thr Val Thr		
20	25	30
Arg Gly Tyr Leu Ser Val Leu Arg Thr Gly Trp Tyr Thr Asn Val Phe		
35	40	45
Thr Leu Gly Val Gly Asp Val Lys Asn Leu Thr Cys Thr Asp Gly Pro		
50	55	60
Ser Leu Ile Arg Thr Glu Leu Glu Leu Thr Lys Asn Ala Leu Glu Glu		
65	70	75
Leu Lys Thr Val Ser Ala Asp Gln Leu Ala Lys Glu Ala Arg Ile Met		
85	90	95
Ser Pro Arg Lys Ala Arg Phe Val Leu Gly Ala Ile Ala Leu Gly Val		
100	105	110
Ala Thr Ala Ala Ala Val Thr Ala Gly Val Ala Ile Ala Lys Thr Ile		
115	120	125

Arg Leu Glu Gly Glu Val Ala Ala Ile Lys Gly Ala Leu Arg Lys Thr
 130 135 140
 Asn Glu Ala Val Ser Thr Leu Gly Asn Gly Val Arg Val Leu Ala Thr
 145 150 155 160
 Ala Val Asn Asp Leu Lys Asp Phe Ile Ser Lys Lys Leu Thr Pro Ala
 165 170 175
 Ile Asn Arg Asn Lys Cys Asp Ile Ser Asp Leu Lys Met Ala Val Ser
 180 185 190
 Phe Gly Gln Tyr Asn Arg Arg Phe Leu Asn Val Val Arg Gln Phe Ser
 195 200 205
 Asp Asn Ala Gly Ile Thr Pro Ala Ile Ser Leu Asp Leu Met Thr Asp
 210 215 220
 Ala Glu Leu Val Arg Ala Val Ser Asn Met Pro Thr Ser Ser Gly Gln
 225 230 235 240
 Ile Asn Leu Met Leu Glu Asn Arg Ala Met Val Arg Arg Lys Gly Phe
 245 250 255
 Gly Ile Leu Ile Gly Val Tyr Gly Ser Ser Val Val Tyr Ile Val Gln
 260 265 270
 Leu Pro Ile Phe Gly Val Ile Asp Thr Pro Cys Trp Arg Val Lys Ala
 275 280 285
 Ala Pro Leu Cys Ser Gly Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg
 290 295 300
 Glu Asp Gln Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr
 305 310 315 320
 Pro Asn Glu Glu Asp Cys Glu Val Arg Ser Asp His Val Phe Cys Asp
 325 330 335
 Thr Ala Ala Gly Ile Asn Val Ala Lys Glu Ser Glu Glu Cys Asn Arg
 340 345 350
 Asn Ile Ser Thr Thr Lys Tyr Pro Cys Lys Val Ser Thr Gly Arg His
 355 360 365
 Pro Ile Ser Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys
 370 375 380
 Tyr Asp Gly Met Ser Cys Ser Ile Gly Ser Asn Lys Val Gly Ile Ile
 385 390 395 400
 Arg Pro Leu Gly Lys Gly Cys Ser Tyr Ile Ser Asn Gln Asp Ala Asp
 405 410 415
 Thr Val Thr Ile Asp Asn Thr Val Tyr Gln Leu Ser Lys Val Glu Gly
 420 425 430
 Glu Gln His Thr Ile Lys Gly Lys Pro Val Ser Ser Asn Phe Asp Pro
 435 440 445
 Ile Glu Phe Pro Glu Asp Gln Phe Asn Val Ala Leu Asp Gln Val Phe
 450 455 460
 Glu Ser Val Glu Lys Ser Gln Asn Leu Ile Asp Gln Ser Asn Lys Ile
 465 470 475 480
 Leu Asp Ser Ile Glu Lys Gly Asn Ala Gly Phe Val Ile Val Ile Val
 485 490 495
 Leu Ile Val Leu Leu Met Leu Ala Ala Val Gly Val Gly Val Phe Phe
 500 505 510
 Val Val Lys Lys Arg Lys Ala Ala Pro Lys Phe Pro Met Glu Met Asn
 515 520 525
 Gly Val Asn Asn
 530

<210> 11

<211> 537

<212> PRT

<213> Avian pneumovirus

<220>

<223> Avian pneumovirus isolate 1b fusion protein mRNA,
complete cds

<400> 11

Met Ser Trp Lys Val Val Leu Leu Leu Val Leu Leu Ala Thr Pro Thr
1 5 10 15
Gly Gly Leu Glu Glu Ser Tyr Leu Glu Glu Ser Cys Ser Thr Val Thr
20 25 30
Arg Gly Tyr Leu Ser Val Leu Arg Thr Gly Trp Tyr Thr Asn Val Phe
35 40 45
Thr Leu Glu Val Gly Asp Val Glu Asn Leu Thr Cys Thr Asp Gly Pro
50 55 60
Ser Leu Ile Arg Thr Glu Leu Glu Leu Thr Lys Asn Ala Leu Glu Glu
65 70 75 80
Leu Lys Thr Val Ser Ala Asp Gln Leu Ala Lys Glu Ala Arg Ile Met
85 90 95
Ser Pro Arg Lys Ala Arg Phe Val Leu Gly Ala Ile Ala Leu Gly Val
100 105 110

Ala Thr Ala Ala Ala Val Thr Ala Gly Val Ala Ile Ala Lys Thr Ile
115 120 125
Arg Leu Glu Gly Glu Val Ala Ala Ile Lys Gly Ala Leu Arg Lys Thr
130 135 140
Asn Glu Ala Val Ser Thr Leu Gly Asn Gly Val Arg Val Leu Ala Thr
145 150 155 160
Ala Val Asn Asp Leu Lys Asp Phe Ile Ser Lys Lys Leu Thr Pro Ala
165 170 175
Ile Asn Arg Asn Lys Cys Asp Ile Ser Asp Leu Lys Met Ala Val Ser
180 185 190
Phe Gly Gln Tyr Asn Arg Arg Phe Leu Asn Val Val Arg Gln Phe Ser
195 200 205
Asp Asn Ala Gly Ile Thr Pro Ala Ile Ser Leu Asp Leu Met Thr Asp
210 215 220
Ala Glu Leu Val Arg Ala Val Ser Asn Met Pro Thr Ser Ser Gly Gln
225 230 235 240
Ile Asn Leu Met Leu Glu Asn Arg Ala Met Val Arg Arg Lys Gly Phe
245 250 255
Gly Ile Leu Ile Gly Val Tyr Gly Ser Ser Val Val Tyr Ile Val Gln
260 265 270
Leu Pro Ile Phe Gly Val Ile Asp Thr Pro Cys Trp Lys Val Lys Ala
275 280 285
Ala Pro Leu Cys Ser Gly Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg
290 295 300
Glu Asp Gln Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr
305 310 315 320
Pro Asn Glu Glu Asp Cys Glu Val Arg Ser Asp His Val Phe Cys Asp
325 330 335
Thr Ala Ala Gly Ile Asn Val Ala Lys Glu Ser Glu Glu Cys Asn Arg
340 345 350
Asn Ile Ser Thr Thr Lys Tyr Pro Cys Lys Val Ser Thr Gly Arg His
355 360 365
Pro Ile Ser Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys
370 375 380
Tyr Asp Gly Met Ser Cys Ser Ile Gly Ser Asn Lys Val Gly Ile Ile
385 390 395 400
Arg Pro Leu Gly Lys Gly Cys Ser Tyr Ile Ser Asn Gln Asp Ala Asp
405 410 415
Thr Val Thr Ile Asp Asn Thr Val Tyr Gln Leu Ser Lys Val Glu Gly
420 425 430
Glu Gln His Thr Ile Lys Gly Lys Pro Val Ser Ser Asn Phe Asp Pro
435 440 445
Ile Glu Phe Pro Glu Asp Gln Phe Asn Val Ala Leu Asp Gln Val Phe
450 455 460

Glu Ser Val Glu Lys Ser Gln Asn Leu Ile Asp Gln Ser Asn Lys Ile
 465 470 475 480
 Leu Asp Ser Ile Glu Lys Gly Asn Ala Gly Phe Val Ile Val Ile Val
 485 490 495
 Leu Ile Val Leu Leu Met Leu Ala Ala Val Gly Val Gly Val Phe Phe
 500 505 510
 Val Val Lys Lys Arg Lys Ala Ala Pro Lys Phe Pro Met Glu Met Asn
 515 520 525
 Gly Val Asn Asn Lys Gly Phe Ile Pro
 530 535

<210> 12

<211> 538

<212> PRT

<213> Turkey rhinotracheitis virus

<220>

<223> Turkey rhinotracheitis virus gene for fusion
protein (F1 and F2 subunits), complete cds

<400> 12

Met Asp Val Arg Ile Cys Leu Leu Phe Leu Ile Ser Asn Pro Ser
 1 5 10 15
 Ser Cys Ile Gln Glu Thr Tyr Asn Glu Ser Cys Ser Thr Val Thr
 20 25 30
 Arg Gly Tyr Lys Ser Val Leu Arg Thr Gly Trp Tyr Thr Asn Val Phe
 35 40 45
 Asn Leu Glu Ile Gly Asn Val Glu Asn Ile Thr Cys Asn Asp Gly Pro
 50 55 60
 Ser Leu Ile Asp Thr Glu Leu Val Leu Thr Lys Asn Ala Leu Arg Glu
 65 70 75 80
 Leu Lys Thr Val Ser Ala Asp Gln Val Ala Lys Glu Ser Arg Leu Ser
 85 90 95
 Ser Pro Arg Arg Arg Phe Val Leu Gly Ala Ile Ala Leu Gly Val
 100 105 110
 Ala Thr Ala Ala Ala Val Thr Ala Gly Val Ala Leu Ala Lys Thr Ile
 115 120 125
 Arg Leu Glu Gly Glu Val Lys Ala Ile Lys Asn Ala Leu Arg Asn Thr
 130 135 140
 Asn Glu Ala Val Ser Thr Leu Gly Asn Gly Val Arg Val Leu Ala Thr
 145 150 155 160
 Ala Val Asn Asp Leu Lys Glu Phe Ile Ser Lys Lys Leu Thr Pro Ala
 165 170 175
 Ile Asn Gln Asn Lys Cys Asn Ile Ala Asp Ile Lys Met Ala Ile Ser
 180 185 190
 Phe Gly Gln Asn Asn Arg Arg Phe Leu Asn Val Val Arg Gln Phe Ser
 195 200 205
 Asp Ser Ala Gly Ile Thr Ser Ala Val Ser Leu Asp Leu Met Thr Asp
 210 215 220
 Asp Glu Leu Val Arg Ala Ile Asn Arg Met Pro Thr Ser Ser Gly Gln
 225 230 235 240
 Ile Ser Leu Met Leu Asn Asn Arg Ala Met Val Arg Arg Lys Gly Phe
 245 250 255
 Gly Ile Leu Ile Gly Val Tyr Asp Gly Thr Val Val Tyr Met Val Gln
 260 265 270
 Leu Pro Ile Phe Gly Val Ile Glu Thr Pro Cys Trp Arg Val Val Ala
 275 280 285
 Ala Pro Leu Cys Arg Lys Glu Lys Gly Asn Tyr Ala Cys Ile Leu Arg
 290 295 300
 Glu Asp Gln Gly Trp Tyr Cys Thr Asn Ala Gly Ser Thr Ala Tyr Tyr
 305 310 315 320

Pro Asn Lys Asp Asp Cys Glu Val Arg Asp Asp Tyr Val Phe Cys Asp
 325 330 335
 Thr Ala Ala Gly Ile Asn Val Ala Leu Glu Val Glu Gln Cys Asn Tyr
 340 345 350
 Asn Ile Ser Thr Ser Lys Tyr Pro Cys Lys Val Ser Thr Gly Arg His
 355 360 365
 Pro Val Ser Met Val Ala Leu Thr Pro Leu Gly Gly Leu Val Ser Cys
 370 375 380
 Tyr Glu Ser Val Ser Cys Ser Ile Gly Ser Asn Lys Val Gly Ile Ile
 385 390 395 400
 Lys Gln Leu Gly Lys Gly Cys Thr His Ile Pro Asn Asn Glu Ala Asp
 405 410 415
 Thr Ile Thr Ile Asp Asn Thr Val Tyr Gln Leu Ser Lys Val Val Gly
 420 425 430
 Glu Gln Arg Thr Ile Lys Gly Ala Pro Val Val Asn Asn Phe Asn Pro
 435 440 445
 Ile Leu Phe Pro Glu Asp Gln Phe Asn Val Ala Leu Asp Gln Val Phe
 450 455 460

Glu Ser Ile Asp Arg Ser Gln Asp Leu Ile Asp Lys Ser Asn Asp Leu
 465 470 475 480
 Leu Gly Ala Asp Ala Lys Ser Lys Ala Gly Ile Ala Ile Ile Val
 485 490 495
 Val Leu Val Ile Leu Gly Ile Phe Phe Leu Leu Ala Val Ile Tyr Tyr
 500 505 510
 Cys Ser Arg Val Arg Lys Thr Lys Pro Lys His Asp Tyr Pro Ala Thr
 515 520 525
 Thr Gly His Ser Ser Met Ala Tyr Val Ser
 530 535

<210> 13
 <211> 537
 <212> PRT
 <213> Avian pneumovirus

<220>
 <223> Avian pneumovirus fusion glycoprotein (F) gene,
 complete cds

<400> 13

Met Ser Trp Lys Val Val Leu Leu Val Leu Leu Ala Thr Pro Thr
 1 5 10 15
 Gly Gly Leu Glu Glu Ser Tyr Leu Glu Glu Ser Cys Ser Thr Val Thr
 20 25 30
 Arg Gly Tyr Leu Ser Val Leu Arg Thr Gly Trp Tyr Thr Asn Val Phe
 35 40 45
 Thr Leu Glu Val Gly Asp Val Glu Asn Leu Thr Cys Thr Asp Gly Pro
 50 55 60
 Ser Leu Ile Arg Thr Glu Leu Glu Leu Thr Lys Asn Ala Leu Glu Glu
 65 70 75 80
 Leu Lys Thr Val Ser Ala Asp Gln Leu Ala Lys Glu Ala Arg Ile Met
 85 90 95
 Ser Pro Arg Lys Ala Arg Phe Val Leu Gly Ala Ile Ala Leu Gly Val
 100 105 110
 Ala Thr Ala Ala Ala Val Thr Ala Gly Val Ala Ile Ala Lys Thr Ile
 115 120 125
 Arg Leu Glu Gly Glu Val Ala Ala Ile Lys Gly Ala Leu Arg Lys Thr
 130 135 140
 Asn Glu Ala Val Ser Thr Leu Gly Asn Gly Val Arg Val Leu Ala Thr
 145 150 155 160
 Ala Val Asn Asp Leu Lys Asp Phe Ile Ser Lys Lys Leu Thr Pro Ala

165	170	175
Ile Asn Arg Asn Lys Cys Asp Ile Ser Asp Leu Lys Met Ala Val Ser		
180	185	190
Phe Gly Gln Tyr Asn Arg Arg Phe Leu Asn Val Val Arg Gln Phe Ser		
195	200	205
Asp Asn Ala Gly Ile Thr Pro Ala Ile Ser Leu Asp Leu Met Thr Asp		
210	215	220
Ala Glu Leu Val Arg Ala Val Ser Asn Met Pro Thr Ser Ser Gly Gln		
225	230	235
Ile Asn Leu Met Leu Glu Asn Arg Ala Met Val Arg Arg Lys Gly Phe		
245	250	255
Gly Ile Leu Ile Gly Val Tyr Gly Ser Ser Val Val Tyr Ile Val Gln		
260	265	270
Leu Pro Ile Phe Gly Val Ile Asp Thr Pro Cys Trp Lys Val Lys Ala		
275	280	285
Ala Pro Leu Cys Ser Gly Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg		
290	295	300
Glu Asp Gln Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr		
305	310	315
		320
Pro Asn Glu Glu Asp Cys Glu Val Arg Ser Asp His Val Phe Cys Asp		
325	330	335
Thr Ala Ala Gly Ile Asn Val Ala Lys Glu Ser Glu Glu Cys Asn Arg		
340	345	350
Asn Ile Ser Thr Thr Lys Tyr Pro Cys Lys Val Ser Thr Gly Arg His		
355	360	365
Pro Ile Ser Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys		
370	375	380
Tyr Asp Gly Met Ser Cys Ser Ile Gly Ser Asn Lys Val Gly Ile Ile		
385	390	395
Arg Pro Leu Gly Lys Gly Cys Ser Tyr Ile Ser Asn Gln Asp Ala Asp		
405	410	415
Thr Val Thr Ile Asp Asn Thr Val Tyr Gln Leu Ser Lys Val Glu Gly		
420	425	430
Glu Gln His Thr Ile Lys Gly Lys Pro Val Ser Ser Asn Phe Asp Pro		
435	440	445
Ile Glu Phe Pro Glu Asp Gln Phe Asn Ile Ala Leu Asp Gln Val Phe		
450	455	460
Glu Ser Val Glu Lys Ser Gln Asn Leu Ile Asp Gln Ser Asn Lys Ile		
465	470	475
Leu Asp Ser Ile Glu Lys Gly Asn Ala Gly Phe Val Ile Val Ile Val		
485	490	495
Leu Ile Val Leu Leu Met Leu Ala Ala Val Gly Val Gly Val Phe Phe		
500	505	510
Val Val Lys Lys Arg Lys Ala Ala Pro Lys Phe Pro Met Glu Met Asn		
515	520	525
Gly Val Asn Asn Lys Gly Phe Ile Pro		
530	535	

<210> 14
 <211> 1193
 <212> DNA
 <213> rhinotracheitis virus

<220>
 <221> CDS
 <222> (16) ... (1191)
 <223> Turkey rhinotracheitis virus (strain CVL14/1)
 attachment protein (G) mRNA, complete cds

<400> 14

gggacaagta tctctatggg gtccaaacta tatatggctc agggcaccag tgcataatcaa 60
actgcagtgg gttctggct ggacatcgaa aggaggtaca tattggctat agtcctatca 120
gccttcgggc tgacctgcac agtcaattt gcactcaatg tttagcgtat agttgaacaa 180
tcagtgttag aggagtgcag aaactacaat ggaggagata gagattggtg gtcaccacc 240
caggagcagc caactactgc accaagtgcg actccagcag gaaattatgg aggattacaa 300
acggctcgaa caagaaagtc tgaaagctgt ttgcattgtc aaatttctta tggtgatatg 360
tatagccgca gtgataactgt actgggtgtt tttgattgtt tgggcttatt gttctttgc 420
aaatcaggac caatttgtca gcgagataat caagttgacc caacagccct ctgcattgc 480
agggtagatc tttcaagtgt ggactgctgc aaggtgaaca agattagcac taacagcagc 540
accacctctg agccccagaa gaccaacccg gcatggccta gccaagacaa cacagactcc 600
gatccaaatc cccaaaggcat aaccaccagc acagccactc tgctctcaac aagtctggc 660
ctcatgctca catgaagac tggacacac aaatcaggc ccccccaga cttgcccggg 720
agcaacacca acggaaaaaac aaccacagac cgagaaccag ggcccacaaa ccaaccaa 780
tcaaccacca atggcaaca caataaacac acccaacgaa tgacacccccc gcaagtcac 840
gacaacacaa gaaccoatcct ccagcacaca acaccctggg aaaagacatt cagtacatac 900
aagccccacac actctccgac caacgaatca gataatccc tccccacaac tcaaaacacg 960
atcaactgtg aacattttga cccccaaggc aaggaaaaaa tctgctacag agtaggttct 1020
tacaactcca atattacaaa gcaatgcaga attgatgtgc ctttggttcc cacttata 1080
acagtgtgca tgaaaacata ctataccgaa ccattcaact gttggaggcg tatctggcgt 1140
tgctgtgtg atgacggagt tggtctggtt gagtggtt gcaactagttt act 1193

<210> 15
<211> 1260
<212> DNA
<213> rhinotracheitis virus

<220>
<221> CDS
<222> (16)...(1260)
<223> Turkey rhinotracheitis virus (strain 6574)
attachment protein (G), complete cds

<400> 15
gggacaagta tccagatggg gtcagagctc tacatcatag aggggggttag ctcatctgaa 60
atagtccctca agcaagtccct cagaaggagc caaaaaatac tgtagact ggtgttatca 120
gccttaggct tgacgctcac tagcaattt gttatatcta tttgtatttag tgtagaacag 180
gtcaaaattac gacagtgtgt ggacactt tggcgaaaa atggatcctt acatccagga 240
cagtcaacag aaaataacttc aacaagaggt aagactacaa caaaagaccc tagaagatta 300
caggcgactg gagcaggaaa gtttgagagc tgggttatg tgcaaggtagt tgatgggtat 360
atgcattgatc gcagtttatgc tggactgggt ggtgttattt gtttggttctt attggctt 420
tgtgaatcag gaccaatttgc tggggagat acttggctcg aagacgaaa cttctgccg 480
tgcaactttt cttccatgg ggtgagttgc tgcaaaaaac cccaaagcaa ggcacccact 540
gcccgaggaa actccaaacc agctaacagc aaatcaactc ctccggata ttccagacagg 600
gccagcaag aacataatcc cttccaaaggc gagcaacccc gcagggggccc aaccagcagc 660
aagacaacta ttgcttagcac cccttcaaca gaggacactg ctaaaaccaac gattagcaa 720
cctaaactca ccatcaggcc ctcgcaaaaga ggtccatccg gcagcacaaa agcagcctcc 780
agcacccccc gccacaagac caacaccaga ggcaccagca agacgaccga ccagagaccc 840
cgccacccggac ccactcccgaa aaggccccaga caaaccacca gcacagcaac tccggccccc 900
acaaccccaa tccacaaggc cggggccccc acccccaaacc caacaacaga cctcaagggtc 960
aaccaccaaggc aaggcagcac aagcccaact gcaatacaga aaaaccaac cacacaaagt 1020
aatcttggttt actgcacact gtcgtatcca gatgagccac aaaggatttg ttaccaggtt 1080
ggaaacttaca atccttagtca atcgggaaacc tgcaacatag aggttccaaa atgttccact 1140
tatgggcattt cttgtatggc tacattat gacaccccat tcaactgctg ggcaggacc 1200
aggagatgca tctgtgattc cggaggggag ctgattgagt ggtgctgtac tagtcaataa 1260

<210> 16
<211> 391
<212> PRT
<213> Turkey rhinotracheitis virus

<220>

<223> Turkey rhinotracheitis virus (strain CVL14/1)
attachment protein (G) mRNA, complete cds

<400> 16
Met Gly Ser Lys Leu Tyr Met Ala Gln Gly Thr Ser Ala Tyr Gln Thr
1 5 10 15
Ala Val Gly Phe Trp Leu Asp Ile Gly Arg Arg Tyr Ile Leu Ala Ile
20 25 30
Val Leu Ser Ala Phe Gly Leu Thr Cys Thr Val Thr Ile Ala Leu Thr
35 40 45
Val Ser Val Ile Val Glu Gln Ser Val Leu Glu Glu Cys Arg Asn Tyr
50 55 60
Asn Gly Gly Asp Arg Asp Trp Trp Ser Thr Thr Gln Glu Gln Pro Thr
65 70 75 80
Thr Ala Pro Ser Ala Thr Pro Ala Gly Asn Tyr Gly Gly Leu Gln Thr
85 90 95
Ala Arg Thr Arg Lys Ser Glu Ser Cys Leu His Val Gln Ile Ser Tyr
100 105 110
Gly Asp Met Tyr Ser Arg Ser Asp Thr Val Leu Gly Gly Phe Asp Cys
115 120 125
Met Gly Leu Leu Val Leu Cys Lys Ser Gly Pro Ile Cys Gln Arg Asp
130 135 140
Asn Gln Val Asp Pro Thr Ala Leu Cys His Cys Arg Val Asp Leu Ser
145 150 155 160
Ser Val Asp Cys Cys Lys Val Asn Lys Ile Ser Thr Asn Ser Ser Thr
165 170 175
Thr Ser Glu Pro Gln Lys Thr Asn Pro Ala Trp Pro Ser Gln Asp Asn
180 185 190
Thr Asp Ser Asp Pro Asn Pro Gln Gly Ile Thr Thr Ser Thr Ala Thr
195 200 205
Leu Leu Ser Thr Ser Leu Gly Leu Met Leu Thr Ser Lys Thr Gly Thr
210 215 220
His Lys Ser Gly Pro Pro Gln Ala Leu Pro Gly Ser Asn Thr Asn Gly
225 230 235 240
Lys Thr Thr Thr Asp Arg Glu Pro Gly Pro Thr Asn Gln Pro Asn Ser
245 250 255
Thr Thr Asn Gly Gln His Asn Lys His Thr Gln Arg Met Thr Pro Pro
260 265 270
Pro Ser His Asp Asn Thr Arg Thr Ile Leu Gln His Thr Thr Pro Trp
275 280 285
Glu Lys Thr Phe Ser Thr Tyr Lys Pro Thr His Ser Pro Thr Asn Glu
290 295 300
Ser Asp Gln Ser Leu Pro Thr Thr Gln Asn Ser Ile Asn Cys Glu His
305 310 315 320
Phe Asp Pro Gln Gly Lys Glu Lys Ile Cys Tyr Arg Val Gly Ser Tyr
325 330 335
Asn Ser Asn Ile Thr Lys Gln Cys Arg Ile Asp Val Pro Leu Cys Ser
340 345 350
Thr Tyr Ser Thr Val Cys Met Lys Thr Tyr Tyr Thr Glu Pro Phe Asn
355 360 365
Cys Trp Arg Arg Ile Trp Arg Cys Leu Cys Asp Asp Gly Val Gly Leu
370 375 380
Val Glu Trp Cys Cys Thr Ser
385 390

<210> 17
<211> 414
<212> PRT
<213> rhinotracheitis virus

<220>

<223> Turkey rhinotracheitis virus (strain 6574)
attachment protein (G), complete cds

<400> 17
Met Gly Ser Glu Leu Tyr Ile Ile Glu Gly Val Ser Ser Ser Glu Ile
1 5 10 15
Val Leu Lys Gln Val Leu Arg Arg Ser Gln Lys Ile Leu Leu Gly Leu
20 25 30
Val Leu Ser Ala Leu Gly Leu Thr Leu Thr Ser Thr Ile Val Ile Ser
35 40 45
Ile Cys Ile Ser Val Glu Gln Val Lys Leu Arg Gln Cys Val Asp Thr
50 55 60
Tyr Trp Ala Glu Asn Gly Ser Leu His Pro Gly Gln Ser Thr Glu Asn
65 70 75 80
Thr Ser Thr Arg Gly Lys Thr Thr Lys Asp Pro Arg Arg Leu Gln
85 90 95
Ala Thr Gly Ala Gly Lys Phe Glu Ser Cys Gly Tyr Val Gln Val Val
100 105 110
Asp Gly Asp Met His Asp Arg Ser Tyr Ala Val Leu Gly Gly Val Asp
115 120 125
Cys Leu Gly Leu Leu Ala Leu Cys Glu Ser Gly Pro Ile Cys Gln Gly
130 135 140

Asp Thr Trp Ser Glu Asp Gly Asn Phe Cys Arg Cys Thr Phe Ser Ser
145 150 155 160
His Gly Val Ser Cys Cys Lys Lys Pro Lys Ser Lys Ala Thr Thr Ala
165 170 175
Gln Arg Asn Ser Lys Pro Ala Asn Ser Lys Ser Thr Pro Pro Val His
180 185 190
Ser Asp Arg Ala Ser Lys Glu His Asn Pro Ser Gln Gly Glu Gln Pro
195 200 205
Arg Arg Gly Pro Thr Ser Ser Lys Thr Thr Ile Ala Ser Thr Pro Ser
210 215 220
Thr Glu Asp Thr Ala Lys Pro Thr Ile Ser Lys Pro Lys Leu Thr Ile
225 230 235 240
Arg Pro Ser Gln Arg Gly Pro Ser Gly Ser Thr Lys Ala Ala Ser Ser
245 250 255
Thr Pro Ser His Lys Thr Asn Thr Arg Gly Thr Ser Lys Thr Thr Asp
260 265 270
Gln Arg Pro Arg Thr Gly Pro Thr Pro Glu Arg Pro Arg Gln Thr His
275 280 285
Ser Thr Ala Thr Pro Pro Pro Thr Thr Pro Ile His Lys Gly Arg Ala
290 295 300
Pro Thr Pro Lys Pro Thr Thr Asp Leu Lys Val Asn Pro Arg Glu Gly
305 310 315 320
Ser Thr Ser Pro Thr Ala Ile Gln Lys Asn Pro Thr Thr Gln Ser Asn
325 330 335
Leu Val Asp Cys Thr Leu Ser Asp Pro Asp Glu Pro Gln Arg Ile Cys
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gaatcagaac atcacaccag ctcatcaccc atggaatcca gcagagaaaac tccaacggtc 240
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acaatctccc caaaaaggca acaacaccat attagctctg cccaaatctc cctggaaaaa 840
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cccacagata attcagacac caactcaagc ccacaacatc caactcaaca gtccacagaa 300
ggctccacac tctactttgc agcctcagca agtcaccag agacagaacc aacatcaaca 360
ccagacacaa cagaccgccc gcccttcgtc gacacacaca caacacccacc aagcgcaagg 420
agaacaaaga caagtccggc agtccacaca aaaaacaacc caaggataag ctccagaaca 480
cattctccac catggcaac gacaaggacg gcacgcagaa ccaccactct ccgcacaagg 540
agcacaagaa agagaccgtc cacagcatca gtccaaacccg acatcagcgc aacaacccac 600
aaaaacgaag aagcaagtcc agcgagccca caaacatctg caagcacaac aagaacacaa 660
agaaaaagcg tggaggccaa cacatcaaca acatacaacc aaactagtt aaaaaaaaaata 720
caaaataact ctaagataaa ccatgcagac accaacaatg gagaagtcaa aagacaattc 780
acaatctccc caaaaaggca acaacaccat attagctctg cccaaatctc cctggaaaaaa 840
acactcgccc atataccaaa aataccacaa ccaccccaag aaaaaaactg ggcaaaacaa 900
cacccaa 907

<210> 89
<211> 907
<212> DNA
<213> human metapneumo virus

<400> 89
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ttgagtatacg ccctcaatat ctatctgatc ataaactata caatgcaaga aaacacatcc 180
gaatcagaac atcacaccag ctcatcaccc atggaatcca gcaggaaac tccaacggtc 240
cccatagaca actcagacac caatccaggc tcacagtatc caactcaaca gtccacagaa 300
gactccacac tccactctgc agtccagca agtcaccag agacagaacc aacatcaaca 360
ccagacacaa caagccgccc gcccttcgtc gacacacaca caacacccacc aagtgcaga 420
aggacaagga caagtccggc agtccacaca aaaaacaatc caaggtaag ccccagaaca 480
cattccccac catggcaat gacaaggacg gtcccgccaa ccaccactct ccgcacaagg 540
agcacaagaa aaagactgtc tacagcatca gtccaaacccg acagcagcgc aacaacccac 600
aaacacgaag aaacaagccc agtgagccca caaacatctg caagcacagc aagaccacaa 660
aggaagggca tggaggccag cacatcaaca acatacaacc aaactagtt aaaaaaaaaata 720
caaaataact ctaagataaa ccatgttagac accaacaattt gagaaggccaa aaggcaattc 780
acaatctccc aaaaaagcaa caacaccata ttagctccgc ttaaatctcc ctgaaaaaaaa 840
cactcaccac tataccaaact ataccacaa catcccaaga aaaaaggctg ggcaaaacaa 900
cacccaa 907

<210> 90
<211> 908
<212> DNA
<213> human metapneumo virus

<400> 90
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cgtgtggcac gcagcaaatttgc cttaaaaat gcctcttgc tcctaataagg aataactaca 120
ttgagtatacg ccctcaatataat ctagtgcata ataaactata caatgcaga aaacacatcc 180
gaatcagaac atcacaccag ttcatcaccc atgaaatcca gcagggaaac tccaacggtc 240
cctatggaca actcagacac caatccaggc tcacagtatc caactcaaca gtccacagaa 300
ggctccacac tccactttgc agcctcagca agtcaccag agacagaacc aacatcaaca 360
ccagacacaa caagccgccc gcccttcgtc gacacacaca caacaccatc aagtgcaga 420
agaacaaaga caagtccggc agtccacacca aaaaacaatc taaggataag ccccagaaca 480
cattcccccac catgggcaat gacaaggacg gtccgtggaa ccaccactt ccgcacaaggc 540
agcataagaa aaagaccgtc cacagcatca gtccaaacctg acagcagcgc aacaacccac 600
aaacacgaag aagcaagccc agtgagcccg caagcatctg caagcacaagc aagaccacaa 660
aggaaggcga tggaggccag cacatcaaca acatacaacc aaactagttt aaaaaaaaata 720
taaaataact ctaagataaa ccatgttagac accaacaatt gagaaggccaa aaggcaattt 780
acaatctccc caaaaaggca acaacaccat attagctccg cttaaatctc cctggaaaaaa 840
acactcgccc atataccaac tataccacaa ccattccaaag gaaaaaaagct gggtaaaaca 900
acacccaa 908

<210> 91
<211> 908
<212> DNA
<213> human metapneumo virus

<400> 91
atggaggtga aagtggagaa cattcgaaaca atagatatgc tcaaagcaag agtaaaaat 60
cgtgtggcac gcagcaaatttgc cttaaaaat gcctcttgc tcctaataagg aataactaca 120
ttgagtatacg ccctcaatataat ctagtgcata ataaactata caatgcaga aaacacatcc 180
gaatcagaac atcacaccag ttcatcaccc atgaaatcca gcagggaaac tccaacggtc 240
cctatggaca actcagacac caatccaggc tcacagtatc caactcaaca gtccacagaa 300
ggctccacac tccactttgc agcctcagca agtcaccag agacagaacc aacatcaaca 360
ccagacacaa caagccgccc gcccttcgtc gacacacaca caacaccatc aagtgcaga 420
agaataagaa caagtccggc agtccacacca aaaaacaatc taaggataag ccccagaaca 480
cattcccccac catgggcaat gacaaggacg gtccgtggaa ccaccactt ccgcacaaggc 540
agcataagaa aaagaccgtc cacagcatca gtccaaacctg acagcagcgc aacaacccac 600
aaacacgaag aagcaagccc agtgagcccg caagcatctg caagcacaagc aagaccacaa 660
aggaaggcga tggaggccag cacatcaaca acatacaacc aaactagttt aaaaaaaaata 720
tacaataact ctaagataaa ccatgttagac accaacaatt gagaaggccaa aaggcaattt 780
acaatctccc caaaaaggca acaacaccat attagctccg cttaagtctc cctggaaaaaa 840
acactcgccc atataccaac tataccacaa ccattccaaag aaaaaaaagct gggcaaaaca 900
acacccaa 908

<210> 92
<211> 888
<212> DNA
<213> human metapneumo virus

<400> 92
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cgtgtggcac gtagcaaatttgc cttaaaaat gcttctttaa tcctcatagg aataactaca 120
ctgagtatacg ctctcaatataat ctagtgcata ataaactaca caataaaaaa aaccacatcc 180
gaatcagaac accacaccag ctcaccaccc acagaacccca acaaggaagc ttcaacaatc 240
tccacagaca acccagacat caatccaaggc tcacagcatc caactcaaca gtccacagaa 300
aaccacacac tcaaccccgcc agcatcagcg agcccatcg aaacagaacc agcatcaaca 360
ccagacacaa caaaccggct gtcctccgtc gacaggtcca cagcacaacc aagtgaaagc 420
agaacaaaga caaaaaccgac agtccacacca atcaacaacc caaacacacgc ttccagtaca 480

caatccccac cacggacaac aacgaaggca atccgcagag ccaccactt ccgcattgagc 540
agcacagggaa aaagaccaac cacaacatta gtccagtccg acagcagcac cacaacccaa 600
aatcatgaag aaacaggttc agcgaaccca caggcgtctg caagcacaat gcaaaaactag 660
cacaccaata atataaaacc aaattagttt acaaaaaatg cgagatagct ctaaagcaaa 720
acatgttaggt accaacaatc aagaaacccaa aagacaactc acaatctccc taaaacagca 780
acgacaccat gtcagctttg ctcaaatttc tctgggagaa acttctaccc acatactaac 840
aacatcacaa ccatctcaag aaaagaaaact gggcaaaaca gcatccaa 888

<210> 93
<211> 888
<212> DNA
<213> human metapneumo virus

<400> 93
atggaggtga aagttagagaa cattcgagca atagacatgc tcaaagcaag agtaaaaat 60
cgtgtggcac gcagcaaatg cttaaaaat gcttcttta tcctcgtagg aataactaca 120
ctgagtagat ccctcaatat ctatctgatc ataaactaca caatacaaaa aaccacatct 180
gaatcagaac accacactag ctcaccaccc acagaatcca acaaagaaaac ttcaacaatc 240
cccatagaca acccagacat caatccaaac tcacagcatc caacccaaaca gtccacagaa 300
agccccacac tcaaccccgcc agcctcggtg agcccatcg aaacagaacc agcatcaaca 360
ccagacacaa caaaccgcct gtcctccgtt gacagatcca caacacaacc aagtgaaagc 420
agaacaaaga caaaaccaac agtccacaca aaaaacaatc caagtacagt ttccagaaca 480
caatccccac tacgggcaac aacgaaggcg gtcctcgag ccaccgcctt ccgcacgagc 540
agcacaagaa aaagaccaac cacaacatca gtccagtctg acagcagcac cacaacccaa 600
aatcatgaag aaacaagttc agcgaaccca caggcatctg caagcacaat gcaaagccag 660
cacaccaaca acataaaacc aaattagttt acaaaaaata cgagatagct ctaaagtaaa 720
acatgttaggt accaacaatc aaggaatcaa aagacaactc acaatctccc taaaacagca 780
acaacatcat gtcagctttg ctcaaatttc cctgggagaa acttctgccc acatactaac 840
aacatcacaa ccatctcaag aaaagaaaact gggcaaaaca gcacccaa 888

<210> 94
<211> 888
<212> DNA
<213> human metapneumo virus

<400> 94
atggaggtga aagttagagaa catccgagca gtagacatgc tcaaagcaag agtaaaaat 60
cgtgtggcac gcagcaaatg cttaaaaat gcctcctta tcctcgtagg aataactaca 120
ctgagcatag ccctcaatat ctatctgatc gtaaactaca caatacaaaa aaccacatcc 180
gaatcagaac accacaccag ctcatccccc acagaatcca acaaagaaac ttcaacaatc 240
cccacagaca acccagacat caatccaaat tcacaacatc caactcaaca gtccacagaa 300
agccccacac tcaacaccgc agcctcggtg agcccatcg aaacagaacc agcatcaaca 360
ccagacacaa caaaccgcct gtcctccgca gacagatcca caacacaacc aagtgaaagc 420
agaacaaaga caaagctgac agtccacaca aaaaacaacc taagtacagc ctccagaaca 480
caatcaccac cacgggcaac aacgaaggcg gtcctcgag acaccgcctt ccacacgagc 540
agcacaggaa aaagaccaac cacaacatca gtccagtctg gcagcagcac cacaactcaa 600
aatcatgaag aaacaagttc atcgaaccca caggcatctg caagcacaat gcaagaccag 660
gacaccaaca atacaaaaca aaattagttt acaaaaaata caagatagct ctaaagtaaa 720
acatgttaggt accaacagta aagaaatcaa aagacaactc acaatctccc caaaacagca 780
acaacatcat gtcagcttcg ctcaaatttc cctgggagaa acttctgccc acatactaac 840
aacatcacaa ctatctcaag aaaagaaaact gggcaaaaaa acactcaa 888

<210> 95
<211> 887
<212> DNA
<213> human metapneumo virus

<400> 95
atggaggtga aagttagagaa catccgagca gtagacatgc tcaaagcaag agtaaaaat 60
cgtgtggcac gcagcaaatg cttaaaaat gcctcctta tcctcgtagg aataactaca 120
ctgagtagat ccctcaatat ctatctgatc gtaaactaca caatacaaaa aaccacatcc 180

gaatcagaac accacactag ctcatcaccc acagaatcca acaaaggaac ttcaacaatc 240
ccacagacaa cccagacatc aatccaaatt cacaacatcc aactcaacag tccacagaaa 300
gccccacact caacaccgca gcctcggtga gcccacatcaga aacagaacca gcatcaacac 360
cagacacaac aaaccgcctg tcctccgcag acagatccac aacacaacca agtggaaagca 420
gaacaaagac aaagctgaca gtccacacaa aaaacaacct aagtacagcc tccagaacac 480
aatcaccacc acgggcaaca acgaaggcgg tcctcagaga caccgccttc cacacgagca 540
gcacaggaaa aagaccaacc acaacatcag tccagtctgg cagcagcacc acaactcaaa 600
atcatgaaga aacaagttca tcgaacccac aggcatctgc aagcacaatg caagaccagg 660
acaccaacaa tacaacaaacaa aattagttaa caaaaaatac aagatagtc taaagtaaaa 720
catgttaggtt ccaacagtaa agaaaatcaa agacaactca taatctcccc aaaacagcaa 780
caacatcatg tcagcttcgc tc当地atctcc ctgggagaaa ctctcgccca cataactaaca 840
acatcacaac tatctcaaga aaagaaactg ggcaaaaaaaa cactcaa 887

<210> 96

<211> 888

<212> DNA

<213> human metapneumo virus

<400> 96

atggaggtga aagttagagaa cattcgagca atagacatgc tcaaagcaag aatggaaaat 60
cgtgtggcac gcagcaaatg cttaaaaat gcttcattaa tcctcatagg aataactact 120
ctgagtatacg ccctcaatcg ctatctgatc ataaactaca caatacaaaa aaccacatct 180
gaatcagaac accacactag ctcaccaccc acagaatcca acaaagaaac ttcaacaatc 240
cctatagaca acccagacat caatccaaac tcacagcatc caactcaaca gtccacagaa 300
agcctcacac tcaacccgcg agcctcggtg agcccatcg aaacagaacc agcatcaaca 360
ccagacacaa caaaccgcct gtcctccgtt gacagatcca caacacaacc aagtggaaagc 420
agaacaaaga caaaactgac agtccacaaa aaaaacatcc caagtacagt ctctagaaca 480
caatccctcaa tacgggcaac aacgaaggcg gtcctcagag ccaccgcct tcgcacgago 540
agcacaggag aaagaccaac tacaacatca gtccagtctg acagcagcac cacaacccaa 600
aatcatgaag aaacagggtt agcgaacccca caggcatctg caagcacaat gcaaaaactag 660
cacaccaaca ttgtaaaaacc aaattagtt acaaaaaata taaaatagct ctaaagtaaaa 720
acatgttaggtt gctaacaatc aagaaaatcaa aagacatctc ataatctctc caaaacagca 780
acaacatcatg tc当地acttttgc tc当地atctc cctgggagaa actttcgccc ccataactgac 840
aacatcacaac tc当地tcaag aaaagaaact gggcaaaaaca gcaccaaaa 888

<210> 97

<211> 888

<212> DNA

<213> human metapneumo virus

<400> 97

atggaggtga aagttagagaa cattcgagca atagacatgc tcaaagcaag agtggaaaat 60
cgtgtggcac gcagcaaatg cttaaaaat gcttcattaa tcctcatagg aataactact 120
ctgagtatacg ccctcaatcg ctatctgatc ataaactaca caatacaaaa aaccacatct 180
gaatcagaac accacactag ctcaccaccc acagaatcta acaaagaaac ttcaacaatc 240
tctatagaca acccagacat caatccaaac tcacagcatc caactcaaca gtccacagaa 300
agcctcacac tc当地ccgcac agcctcggtg agcccatcg aaacagaacc agcatcaaca 360
tcagacacaa caagccgcct gtcctccgtt gacagatcca caacacaacc aagtggaaagc 420
agagcaaggg caaaacccgac agtccacaaag aaaaacatcc caagtacagt ttotagaaca 480
caatccccac tacgggcaac aacgaaggcg gtcctcagag ccaccgcct tcgcacgago 540
agcacaggag agggaccaac cacaacatcg gtccagtctg acagcagcac cacaacccaa 600
aatcatgaag aaacagggtt agcgaacccca caggcatctg caagcacaat gcaaaaactag 660
cacaccaaca ttgtaaaaacc aaattagtt acaaaaaata taaaatagtt ctaaagtaaaa 720
acatgttaggtt gctaacaatc aagaaaatcaa aagacacactc ataatctcccc taaaacagca 780
acaacatcatg tc当地acttttgc tc当地atctc cctgggagaa actttcgccc ccataactgac 840
aacatcacaac tc当地tcaag aaaagaaact gggcaaaaaca gcaccaaaa 888

<210> 98

<211> 888

<212> DNA

<213> human metapneumo virus

<400> 98
atggagggtga aagttagagaa cattcgagca atagacatgc tcaaagcaag agtaaaaat 60
cgtgtggcac gtagcaaatg cttaaaaat gcttctttaa tcctcatagg aataactaca 120
ctgagtagatg ctctcaatat ctatctgatc ataaactaca caatacaaaa aaccacatct 180
gaatcagaac accacaccag ctcaccaccc acagaatcca acaaggaagc ttcaacaatc 240
tccacagaca atccagacat caatccaaac tcacagcatc caactcaaca gtccacagaa 300
aaccacacac taaacccgcg agcatcggtg agctcatcg aaacagaacc agcatcaaca 360
ccagacacaaa caaaccgcct gtcctccgt aacaggtcca cagcacaacc aagtgaaagc 420
agaacaaaga caaaaaccgac agtccacaca agaaacaacc caagcacagc ttccagcaca 480
caatccccac cacggtaac aacgaaggca atcctcagag ccaccgtctt ccgcatgagc 540
agcacagggaa aaagaccagc cacaacatta gtccagtcg acagcagcac cacaacccaa 600
aatcatgaag aaacaggttc agcaaactca caggcatctg caagcacaat gcaaaactag 660
cactccaaca atataaaaacc aaattagttt acaaaaaata cgagatagtct ctaaagtaaa 720
acatgttaggc accaacaatc aggaaatcaa aagacaactc acaacctccc taaaacagca 780
acgacacccat gtcaactttg ctcaaatctc tctgggagaa actttgccc acatactaac 840
aacatcacaa tcatctcaag aaaagaaact gggcaaaaca gcatccaa 888

<210> 99
<211> 888
<212> DNA
<213> human metapneumo virus

<400> 99
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cgtgtggcac gcagcaaatg cttaaaaat gcttctttaa tcctcatagg aataactact 120
ctgagtagatg ccctcaacat ctatctgatc ataaactaca caatacaaaa aaccacatct 180
gaatcagaac accacactag ctcaccaccc acagaatcta acaaaagaaac ttcaacaatc 240
tctatagaca actcagacat caatccaaac tcacagcatc caactcaaca gtccacagaa 300
agcctcacac tcagccccac agcctcggtg agcccatcg aaacagaacc agcatcaaca 360
tcagacacaa caaaccgcct gtctccgt aacagatcca caacacaacc aagtgaaagc 420
agagcaagaa caaaaaccgac agtccacaaag aaaaacatcc caagtacagt ttctagaaca 480
caatccccac tacggcgaac aacgaaggcg gtcctcagag ccaccgtctt tcgcacgagc 540
agcacaggag agggaccaac cacaacatcg gtcctcgatc acagcagcac cacaacccaa 600
aatcatgaag aaacaggctc agcgaacccca caggcatctg caagcacaat gcaaaaccag 660
cacaccaaca ttgcaaaaacc aaattagttt acaaaaaata tgaaatagtt ctaaagtaaa 720
acatgttaggt gccaacaatc aagaaatcaa aagacaactc acaatctccc taaaacagca 780
acaacatcat gccaactttg ctcaaatctc cctgggagaa accctcgccc ccataactgac 840
aacatcacaa tcatctcaag aaaagaaact gggcaaaaca gcacccaa 888

<210> 100
<211> 888
<212> DNA
<213> human metapneumo virus

<400> 100
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cgtgtggcac gcagcaaatg cttaaaaat gcttctttaa tcctcatagg aataactact 120
ctgagtagatg ccctcaatat ctatctgatc ataaactaca caatacaaaa aaccacatct 180
gaatcagaac accacactag ctcaccaccc acagaatcta acaagggaaac ttcaacaatc 240
cctatagaca acccagacat caatccaaac tcacagcatc caactcaaca gtccacagaa 300
agcctcacac tctaccaccc atcctcggtg agctcatcg aaacagaacc agcatcaaca 360
ccaggcataa caaaccaccc gtccttgcgt aacagatcca caacacaacc aagtgaaagc 420
agaacaaaga caaaccggac agtccacaaa aaaaacatct caagtacagt ttctagaaca 480
cagtccccac cacggacaac agcgaaggcg gtcctcgatc ccaccgtctt tcgcacgagc 540
agcacaggag aaagaccaac cacaacacca gtcctcgcc atagcagcac cacaacacaa 600
aatcatgaag aaacaggctc agcgaacccca caggcatccg caagcacaat gcaaaaccag 660
cacaccaaca ttgcaagacc aaattagttt acaaaaaata tgaaatagtt ctaaagtaaa 720
acatgttaggt gccaacaatc aagaaatcaa aagataactc ataatctctc taaaacatca 780
acaacatcat gttactttg ctcaaatctc tctgggagaa accttcgccc ccataactggc 840
aacatcacaa tcatctcaag aaaagaaact gggcaaaaca acacccaa 888

<210> 101
<211> 888
<212> DNA
<213> human metapneumo virus

<400> 101
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cgtgtggcac gcagcaaatg cttaaaaat gcttctttaa tcctcatagg aataactact 120
ctgagtagat ccctcaatat ctatctgatc ataaactaca caataaaaaa aaccacatct 180
gaatcagaac accacactag ctcaccaccc acagaatcta acaaggaaac ttcaacaatc 240
cctatagaca acccagacat caatccaaac tcacagcatc caactcaaca gtccgcagaa 300
agcctcacac tctacccac atcctcggtg agctcatcg aaacagaacc agcatcaaca 360
ccaggcataa caaaccacct gtccttgc gacagatcca caacacaacc aagtgaaagc 420
agaacaaaga caaaccggac agtccacaaa aaaaacatct caagtacagt ttctagaaca 480
cagtcccccac cacggacaac agcgaaggcg gtccccagag ccaccgcct tcgcacgagc 540
agcacaggag aaagaccaac cacaacacca gtccagcccg atagcagcac cacaacacaa 600
aatcatgaag aaacaggctc agcgaaccca caggcatcg caagcacaat gcaaaaccag 660
cacaccaaca ttgcaagacc aaattagttt acaaaaaata tgaaatagct ctaaagtaaa 720
acatgttaggt gccaacaatc aagaaatcaa aagataactc ataatcttc taaaacatca 780
acaacatcat gttaactttg ctcaatctc tctgggagaa accttcgccc ccatactggc 840
aacatcacaa tcacatcaag aaaagaaact gggcaaaaca acacccaa 888

<210> 102
<211> 888
<212> DNA
<213> human metapneumo virus

<400> 102
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cgtgtggcac gcagcaaatg cttaaaaat gcttctttaa tcctcatagg aataactact 120
ctgagtagat ccctcaatat ctatctgatc ataaactaca caataaaaaa aaccacatct 180
gaatcagaac accacactag ctcaccaccc acagaatcta acaaggaaac ttcaacaatc 240
cctatagaca acccagacat caatccaaac tcacagcatc caactcaaca gtccacagaa 300
agcctcacac tctacccac atcctcggtg agctcatcg aaacagaacc agcatcaaca 360
ccaggcataa caaaccacct gtccttgc gacagatcca caacacaacc aagtgaaagc 420
agaacaaaga caaaccggac agtccacaaa aaaaacatct caagtacagt ttctagaaca 480
cagtcccccac cacggacaac agcgaaggcg gtccccagag ccaccgcct tcgcacgagc 540
agcacaggag aaagaccaac cacaacacca gtccagcccg atagcagcac cacaacacaa 600
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cacaccaaca ttgcaagacc aaattagttt acaaaaaata tgaaatagct ctaaagtaaa 720
acatgttaggt gccaacaatc aagaaatcaa aagataactc ataatcttc taaaacatca 780
acaacatcat gttaactttg ctcaatctc tctgggagaa accttcgccc ccatactggc 840
aacatcacaa tcacatcaag aaaagaaact gggcaaaaca acacccaa 888

<210> 103
<211> 888
<212> DNA
<213> human metapneumo virus

<400> 103
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cgtgtggcac gtagcaaatg cttaaaaat gcttctttaa tcctcatagg aataactaca 120
ctgagcatag ccctcaatat ctatctgatc ataaactaca caataacaaca aaccacatct 180
gaatcagaac accacaccag ctcaccaccc acagaatcca acaaggaaagc ttcaacaatc 240
tccacagaca acccagacat caatccaaac tcacagcatc caactcaaca gtccacagaa 300
aaccccacac tcaacccagc agcatcagcg agcccatcg aaacagaatc agcatcaaca 360
ccagatacaa caaaccgcct gtcctccgt gacaggtcca cggtacaacc aagtgaaaac 420
agaacaaaga caaaaactgac agtccacaca agaaacaacc taagcacaacc ctccagtaca 480
caatcccccac cacgggcaac aacgaaggca atccgcagag ccaccacccct ccgcacgagc 540
agcacaggaa gaagaccaac cacaacacta gtccagtcg acagcagcac cacaacccaa 600

aatcatgaag aaacaggctc agcgaaccca caggcatctg caagcacaat gcaaaaccag 660
cacaccaaca atataaaaacc aaattagttt acaaaaaata cgagatagct ctaaagtaaa 720
acatgttaggc accaacaatc aagaaaccaa aagataactc acaatcccc caaaacagca 780
acgacaccat gtcagcttg ctcaaatctc tctgggagaa acttttgcac acataactaac 840
aacatcacaa ccatctcaag aaaagaaact gggcaaaaca gcatccaa 888

<210> 104
<211> 888
<212> DNA
<213> human metapneumo virus

<400> 104
atggaggtga aagttagagaa cattcgagca atagacatgc tcaaagcaag agtggaaaat 60
cgtgtggcac gtagcaaatg cttaaaaat gcttctttaa tcctctatgg aataactaca 120
ctgagcatag ccctcaatat ctatctgatc ataaactaca caatcaaaa aaccacatct 180
gaatcagaac accacaccag ctcaccaccc acagaatcca acaaggaagc ttcaacaatc 240
tccacagaca acccagacat caatccaaac tcacagcatc caactcaaca gtccacagaa 300
aaccacacac tcaacccagc agcatcagcg agcccatcg aaacagaatc agcatcaaca 360
ccagatacaa caaaccgcct gtcctccgta gacaggtcca cggtacaacc aagtggaaaac 420
agaacaaaga caaaaactgac agtccacacca agaaacaacc taagcacagc ctccagtaca 480
caatccccac cacgggcaac aacgaaggca atccgcagag ccaccaccc cccatgagc 540
agcacagggaa gaagaccaac cacaacacta gtccagtcgg acagcagcac cacaacccaa 600
aatcatgaag aaacaggctc agcgaaccca caggcatctg caagcacaat gcaaaaccag 660
cacaccaaca atataaaaacc aaattagttt acaaaaaata cgagatagct ctaaagtaaa 720
acatgttaggc accaacaatc aagaaaccaa aagataactc acaatcccc caaaacagca 780
acgacaccat gtcagcttg ctcaaatctc tctgggagaa acttttgcac acataactaac 840
aacatcacaa ccatctcaag aaaagaaact gggcaaaaca gcatccaa 888

<210> 105
<211> 901
<212> DNA
<213> human metapneumo virus

<400> 105
atggaagtaa gagtggagaa cattcgagcg atagacatgt tcaaagcaaa gataaaaaac 60
cgtataagaa gcagcaggtg ctatagaat gctacactga tccttattgg actaacagcg 120
ttaagcatgg cacttaatat tttcctgatc atcgatcatg caacattaag aaacatgatc 180
aaaacagaaa actgtgctaa catgccgtcg gcagaaccaa gcaaaaagac cccaatgacc 240
tccacagcg gcccaaacac caaacccaa ccacagcaag caacacagtg gaccacagag 300
aactcaacat ccccaactg aaccccgag ggcacatccat acacagggac aactcaaaca 360
tcagacacaa cagctcccc gcaaaccaca gacaaacaca cagcacccgt aaaaatcaacc 420
aatgaacaga tcacccagac aaccacagag aaaaagacaa tcagacaac aacccaaaaa 480
agggaaaaag gaaaagaaaa cacaacacca accacaagca cagctgcaac ccaaaacaacc 540
aacaccacca accaaatcg aaatgcaagt gagacaatca caacatccga cagacccaga 600
actgacacca caacccaaag cagcgaacag acaacccggg caacagaccc aagctcccc 660
ccacaccatg catagagagg tgcaaaactc aaatgagcac aacacacaaa catccatcc 720
aagttagttaa caaaaaacca caaaataacc ttgaaaacca aaaaaccaa acataaacc 780
agacccagaa aaacatagac accatatgga agttcttagc atatgcacca atgagatggc 840
atctgttcat gtatcaatag caccaccatc attcaaggaa taagaagagg cgaaaattta 900
a 901

<210> 106
<211> 901
<212> DNA
<213> human metapneumo virus

<400> 106
atggaagtaa gagtggagaa cattcgagcg atagacatgt tcaaagcaaa gataaagaac 60
cgtataagaa gcagcaggtg ctatagaat gctacactga tccttattgg actaacagcg 120
ttaagcatgg cacttaatat tttcctgatc attgatcatg caacattaag aaacatgatc 180
aaaacagaaa actgtgctaa catgccatcg gcagaaccaa gcaaaaagac cccaatgacc 240

tccacagcag gcccaagcac cgaacccaat ccacagcaag caacacaatg gaccacagag 300
aactcaacat ccccgccgc aacccttagag agccatccat acacagggac aacccaaaca 360
ccagacataa cagtcggcc acaaaccaca gacaaacaca cagcactgaa aatcaacc 420
aatgaacaga tcaccccgac aaccacagag aaaaagacaa ccagagcaac aacccaaaaa 480
agggaaaaag aaaaagaaaa cacaaccaa accacaagca cagtcgaac ccaaacaacc 540
aacaccacca accaaaccag aatgcaagt gagacaatca caacatccga cagaccaga 600
attgacacca caacccaaag cagcgatcg acaaccggg caacagaccc aagtcggcc 660
ccacaccatg cacagagtgg tgcaaaaccc aatgaacac aacacacaaa catccatcc 720
aagtagttaa caaaaaatca caaaaataacc ttgaaaacca aaaaacccaaa ccacaaactt 780
agacccagaa aaacatagac actatatgga aggttgagc atatgcacca atgaaatggt 840
atctgttcat gtatcaatag cgccaccatt atttaaggaa taagaagagg caaaaattca 900
a 901

<210> 107

<211> 860

<212> DNA

<213> human metapneumo virus

<400> 107

atggaagtaa gagtggagaa cattcgagcg atagacatgt tcaaagcaaa gataaaaaac 60
cgtataagaa gcagcaggtg ctatagaaat gctacactga tccttattgg actaacagcg 120
ttaagcatgg cacttaat tttcctgtatc atcgatcatg caacattaag aaacatgatc 180
aaaacagaaa attgtctaa catgcccggc gcagaaccaa gcaaaaagac cccaatgacc 240
tctacagcag gcccaaacac caaaccataat ccacagcaag caacacagtg gaccacggag 300
aactcaacat tcccgccgc aacccatcg ggcattctac acacagggac aactcaaaca 360
ccagacacaa cagtcctca gcaaaccaca gacaaacaca cagcactgaa aatcaacc 420
aatgaacaaa tcaccccgac aaccacagag aaaaagacaa ccagagcaac aacccaaaga 480
agggaaaaag gaaaaagaaaa cacaaccaa accacaagca cagtcgtac ccaaacaacc 540
aacaccacca accaaatcg aatgcaagc gagacaatca caacatccga cagaccaga 600
actgactcca caacccaaag cagcgaaacag acaaccggg caacagaccc aagtcggcc 660
ccacatcatg cacagggaaatg tgcaaaaccc aatgaacac aacacacaaa catccatcc 720
aagtagttaa caaaaaatca gacccagaaa aacatagaca ctatatgaa ggtccgagca 780
tatgcacccg taaaatggca ttgttcatg tatcaatagc gccaccattttaaggaa 840
aagaagaggc aaaaattcaa 860

<210> 108

<211> 861

<212> DNA

<213> human metapneumo virus

<400> 108

atggaagtaa gagtggagaa cattcgagcg atagacatgt tcaaagcaaa gataaaaaac 60
cgtataagaa gcagcaggtg ctatagaaat gctacactga tccttattgg actaacagcg 120
ttaagcatgg cacttaat tttcctgtatc atcgatcatg caacattaat aaacatgatc 180
aaaacagaaa attgtctaa catgcccggc gcagaaccaa gcaagaaagac cccaatgacc 240
tccacagcag gcccaaacac caaaccataat ccacagcaag caacacagtg gaccacggag 300
aactcaacat tcccgccgc aacccatcg ggcattctac acacagggac aactcaaaca 360
ccagacacaa cagtcctca gcaaaccaca gacaaacaca cagcactgaa aatcaacc 420
aatgaacaga tcaccccgac aaccacagag aaaaagacaa ccagagaaac aacccaaaga 480
agggaaaaag gaaaaagaaaa cacaaccaa accacaagca cagtcgaac ccaaacaacc 540
aacaccacca accaaatcg aatgcaagc gagacaatca caacatccga cagaccaga 600
actgactcca caacccaaag cagcgaaacag acaaccggg caacagaccc aagtcggcc 660
gcacaccatg cacagggaaatg tgcaaaaccc aatgaacac aacacacaaa catccatcc 720
aagtagttaa caaaaaatca agacccagaa aacacacagac actatatgga aggtccgagca 780
atatgcacccg atgaaatggc atctgttcat gtatcaatag caccaccattttaaggaa 840
taagaagagg caaaaattca a 861

<210> 109

<211> 860

<212> DNA

<213> human metapneumo virus

<400> 109

atggaagtaa gagtggagaa cattcgagcg atagacatgt tcaaagcaaa gataaaaaac 60
cgtataagaa gcagcaggtg ctatagaat gctacattga tccttattgg actaacagcg 120
ttaagcatgg cacttaatat ttcctgatc atcgatcatg caacattaag aaacatgatc 180
aaaacagaaa attgtgctaa catgccaccg gcagaaccaa gcaaaaagac cccaatgacc 240
tccacagcg gcctaaacac taaacccaat ccacagcaag caacacagtg gaccacggag 300
aactcaacat ccccagcgc aaccccagag ggccatctac acacagggac aactcaaaca 360
ccagacacaa cagctcctca gcaaaccaca gacaagcaca cagcactgcc aaaatcaacc 420
aatgaacaga tcacccagac aaccacagag aaaaagacaa ccagagcaac aacccaaaga 480
agggaaaaag gaaaagaaaa cacaaaccaa accacaagca cagctgcaac ccaaacaacc 540
aacaccacca accaaatcag aaatgcaagc gagacaatca caacatccga cagacccaga 600
actgactcca caacccaaag cagcgaacag acaacccggg caacagaccc aagctcccc 660
ccacaccatg cacagggaaag tgcaaaaccc aaatgaacac aacacacaaa catccatcc 720
aagttagttaa caaaaaatca gacccagaaa aacatagaca ctatatggaa ggtccgagca 780
tatgcaccga tgaaatggca tctgttcatg tatcaatagc gccaccatta tttaaggaat 840
aagaagaggc aaaaattcaa 860

<210> 110

<211> 860

<212> DNA

<213> human metapneumo virus

<400> 110

atggaagtaa gagtggagaa cattcgagcg atagacatgt tcaaagcaaa gataaaaaac 60
cgtataagaa gcagcaggtg ctatagaat gctacactga tccttattgg actaacagcg 120
ttaagcatgg cacttaatat ttcctgatc atcgatcatg caacattaag aaacatgatc 180
aaaacagaaa attgtgctaa catgccggcg gcagaaccaa gcaaaaagac cccaatgacc 240
tccacagcg gcccaaacac caaacccaat ccacagcaag caacacagtg gaccacggag 300
aactcaacat ccccagcgc aaccccagag ggccatctac acacagggac aactcaaaca 360
ccagacacaa cagctcctca gcaaaccaca gacaacaca cagcactgcc aaaatcaacc 420
aatgaacaga tcacccagac aaccacagag aaaaagacaa ccagagcaac aacccaaaga 480
agggaaaaag gaaaagaaaa cacaaaccaa accacaagca cagctgcaac ccaaacaacc 540
aacaccacca accaaatcag aaatgcaatt gagacaatca caacatccga cagacccaga 600
actgactcca caacccaaag cagcgaacag acaacccggg caacagaccc aagctcccc 660
ccacaccatg cacagggaaag tgcaaaaccc aaatgaacac aacacacaaa catccatcc 720
aagttagttaa caaaaaatca gacccagaaa aacatagaca ctatatggaa ggtccgagca 780
tatgcaccga tgaaatggca tctgttcatg tatcaatagc gccaccatta tttaaggaat 840
aagaagaggc aagaattcaa 860

<210> 111

<211> 886

<212> DNA

<213> human metapneumo virus

<400> 111

atggaagtaa gagtggagaa cattcgggca atagacatgt tcaaagcaaa aatgaaaaac 60
cgtataagaa gtagcaagtg ctatagaat gctacactga tccttattgg attaacagca 120
ttaagtatgg cacttaatat ttttttaatc attgattatg caatgtaaa aaacatgacc 180
aaagtggAAC actgtgttaa tatgccggcg gtagaaccaa gcaagaagac cccaatgacc 240
tctgcagttag acttaaacac caaacccaat ccacagcagg caacacagtg ggccgcagag 300
gattcaacat ctctagcgc aacctcagag gaccatctac acacagggac aactccaaca 360
ccagatgcaa cagtcctcga gcaaaccaca gacgagtaca caacattgtc gagatcaacc 420
aacagacaga ccacccaaac aaccacagag aaaaagccaa ccggagcaac aaccaaaaaa 480
gaaaccacaa ctcgaactac aagcacagct gcaacccaaa cactcaacac taccaaccaa 540
actagctatg tgagagaggc aaccacaaca tccgcccagat ccagaacag tgccacaact 600
caaagcagcg accaaacaac ccaggcagca gacccaagct cccaaaccaca ccatacacag 660
aaaagcacaa caacaacata caacacagac acatctctc caagtagtta aaaaaaaaaac 720
tataaaaaataa tcatgaaaac cgaaaaacta gaaaagttaa ttgaactca gaaaagaaca 780
caaacactat atgaattgtt tgagcgtata tactaatgaa atagcatctg tttgtgcattc 840
aataataccca tcattattta agaaataaga agaagctaaa attcaa 886

<210> 112
<211> 889
<212> DNA
<213> human metapneumo virus

<400> 112
atggaaagtaa gagtggagaa cattcggaca atagacatgt tcaaagcaaa gatgaaaaac 60
cgtataagaa gcagcaagtg ctatagaaat gctacactga tccttattgg actgacagca 120
ttaagtatgg cacttaatat tttcttgate atcgattatg caacattaa aaacatgacc 180
aaagtggAAC actgtgtcaa tatgccggcg gtagaaccga gtaagaagac cccaatgacc 240
tctacagttag actcaaggac cggacccaat ccacagcaga caacacagtg gaccacagag 300
gattcaacat ctctagcagc aacctcagag gaccatctac acacaggAAC aactccaaca 360
ctagatgcaa cagtttctca gcaaacccca gacaaggcaca caacaccgct gagatcaacc 420
aatggacaga ccacccagac aaccacagag aaaaagccaa ccagagcaat agccaaaaaa 480
gaaaccacaa accaaaccac aagcacagct gcaaccccaa cattcaacac caccatcaa 540
accagaaatg gaagagagac aaccataaca tctgccagat ccagaaacga cggcacaact 600
caaaggcagc aacaacacaa ccagacaaca gacccaagct cccaaccaca tcatgcata 660
ataagcacaa taacaatatg aacacaacac agacacatct tctccaagta gttaacaaaa 720
aactataaaa taaccatgaa aaccaaaaaa ctagaaaagt aaatttgaac tcagaaaaa 780
acacaacac taaatgattt gtttggcat atatactaat gaaatagcat ctgttcatgc 840
atcaataata ccatcattac ttaagaaata agaagaagca aaaattcaa 889

<210> 113
<211> 885
<212> DNA
<213> human metapneumo virus

<400> 113
atggaaagtaa gagtggagaa cattcggca atagacatgt tcaaagcaaa gatgaaaaac 60
cgtataagaa gtagcaagtg ctatagaaat gctacactga tccttattgg attaacagca 120
ttaagtatgg cacttaatat ttttttaatc attgattatg caatgttaaa aaacatgacc 180
aaagtggAAC actgtgttaa tatgccggcg gtagaaccaa gcaagaagac cccaatgacc 240
tctgcagttag acttaaacac caaactcaat ccacagcagg caacacagt gaccacagag 300
gattcaacat ctctagcagc aacctcggag gatcattac tcacaggAAC aactccaaca 360
ccagatgcaa cagtcctcga gcaaaccaca gacgagcaca caacactgct gagatcaacc 420
aacagacaga ccacccaaac aaccacagag aaaaagccaa ccggagcaac aaccaaaaaa 480
gaaaccacaa ctcgaaccac aagcacagct gcaaccccaa cactcaacac caccaccaa 540
actagcaatg gaagagaggc aaccacaaca tccaccagat ccagaaacgg tgccacaact 600
caaaacagcg atcaacacaac ctagacagca gacccaagct cccaaccaca ccatacacag 660
aaaagcacaa caacaacata caacacagac acatttctc caagtagtta acaaaaaact 720
ataaaataac catgaaaact aaaaaactag aaaagttat ttgaactcag aaaaagaacac 780
aaacactata tgaattgttt gaggcttat actaatgaaa tagcatctgt ttgtcatca 840
ataataccat cattattaa gaaataagaa gaagctaaaa ttcaa 885

<210> 114
<211> 885
<212> DNA
<213> human metapneumo virus

<400> 114
atggaaagtaa gagtggagaa cattcggca atagacatgt tcaaagcaaa gatgaaaaac 60
cgcataagaa gtagcaagtg ctatagaaat gctacactga tccttattgg attaacagca 120
ttaagtatgg cacttaatat ttttttaatc attgattatg caacattaa aaacatgacc 180
aaagtggAAC actgtgttaa tatgccggcg gtagaaccaa gcaagaagac cccaatgacc 240
tctgcagttag acttaaacac caaactcaat ccacagcagg caacacagt gaccacagag 300
gattcaacat ctctagcagc aacctcagag ggccatccac acacaggAAC aactccaaca 360
ccagacgcaa cagtcctcga gcaaaccaca gacgagcaca caacactgct gagatcaacc 420
aacagacaga ccacccaaac agccacagag aaaaagccaa ctggagcaac aaccaaaaaa 480
gaaaccacaa cccgaactac aagtacagct gcaaccccaa caccacac caccaccaa 540
accagcaatg gaagagaggc aaccacaaca tccgcccagg ctggagcaac tgccacaact 600

caaaaacagcg atcaaataac ccaggcagca gactcaagct cccaaaccaca ccatacacag 660
aaaagcacaa caacagcata caacacagac acatctttc caagtagtta aaaaaaaaaact 720
ataaaataac catgaaaacc aaaaaactag aaaagttaat ttgaactcag aaaagaacac 780
aaacactata tgaattgtt gagcgtatatactaa tagcatctgt ttgtgcata 840
ataataccat cattattaa gaaataagaa gaagctaaaa ttcaa 885

<210> 115
<211> 886
<212> DNA
<213> human metapneumo virus

<400> 115
atggaagtaa gagtggagaa cattcggca atagacatgt tcaaagcaaa gatgaaaaac 60
cgtataagaa gtagcaagtg ctatagaaat gctacactga tccttattgg attaacagca 120
ctaagtatgg cacttaatat ttttttaatc attgattatg caaaatcaaa aacatgacc 180
aaagtggAAC actgtgtttaa tatgcccgg gtagaaccaa gcaagaagac cccaatgacc 240
tctgcagtag actcaaacac caaaccataat ccacagcagg caacacagtt gaccacagag 300
gattctacat cttagcagc aacccttagag gaccatccac acacaggag aactccaaca 360
ccagatgcaa cagtctctca gcaaaccaca gacgagcaca caacactgct gagatcaacc 420
aacagacaga ccaccacaaac aactgcagag aaaaagccaa ccagggcaac aaccaaaaaa 480
gaaaccacaa ctcgaaccac aagcacagct gcaacccaaa cactcaacac, caccaccaa 540
actagcaatg gaagagaggc aaccacaaca tctgcccagat ccagaaacaa tgccacaact 600
caaagcagcg atcaaaacaac ccaggcagca gaaccaagct cccaatcaca acatacacag 660
aaaagcacaa caacaacata caacacagac acatcttctc taagttagtta aaaaaaaaaac 720
tataaaataa ccatgaaaac caaaaaacta gaaaagttaa ttgactca gaaaagaaca 780
caaacactat atgaattatt tgagcgtata tactaatgaa atagcatctg ttgtgcata 840
aataatacca tcattattta agaaataaga agaagctaaa attcaa 886

<210> 116
<211> 887
<212> DNA
<213> human metapneumo virus

<400> 116
atggaagtaa gagtggagaa cattcggca atagacatgt tcaaagcaaa gatgaaaaac 60
cgtataagaa gtagcaagtg ctatagaaat gctacactga tccttattgg attatcagca 120
ctaagtatgg cacttaatat ttttttaatc attgattatg caaaatcaaa aacatgacc 180
agagtggAAC actgtgtcaa tatgcccgg gtagaaccaa gcaagaagac cccaatgacc 240
tctgcagtag acttaaacac caaaccataat ccacagcggg caacacagtt gaccacagag 300
gattcaacat ctctagcagc aacccttagag ggccatctac acacaggag aactccaaca 360
ccagatgtaa cagtctctca gcaaaccaca gacgagcaca caacactgct gagatcaacc 420
aacagacaga ccaccacaaac agccgcagag aaaaagccaa ccagagtaac aactaaca 480
gaaaccataa ctcgaaccac aagcacagcc gcaacccaaa cactcaacac caccaccaa 540
accaacaatg gaagagaggc aaccacaaca tctgcccagat ccagaaacaa tgccacaact 600
caaagcagcg accaaacaac ccaggcagca gaccaagct cccaatcaca acatacacag 660
aaaagcataa caacaacata caacacagac acatcttctc caagttagtta aaaaaaaaaac 720
tataaaataa ccatgaaaac caaaaaact agaaaagtta atttgaactc agaaaagaac 780
acaaacacta tatgaattgt ttgagcgtat atactaatgaa aatagcatct gttgtgcata 840
caataatacc atcattattt aagaattaag aagaagctaa aattcaa 887

<210> 117
<211> 887
<212> DNA
<213> human metapneumo virus

<400> 117
atggaagtaa gagtggagaa cattcggca atagacatgt tcaaagcaaa gatgaaaaac 60
cgtataagaa gtagcaagtg ctatagaaat gctacactga tccttattgg attatcagca 120
ctaagtatgg cacttaatat ttttttaatc attgattatg caaaatcaaa aaccatgacc 180
agagtggAAC actgtgtttaa tatgcccgg gtagaaccaa gcaagaagac cccaatgacc 240
tctgcagtag acttaaacac caaaccataat ccacagcagg caacacagtt gaccacagag 300

gattcaacat ctccagcagc aacccttagag ggccatctac acacagggac aactccaaca 360
 ccagatgcaa cagtctctca gcaaaccaca gacgagcaca caacactgct gagatcaacc 420
 aacagacaga ccacccaaac aaccgcagag aaaaagccaa ccagagcaac aaccaaaaaaa 480
 gaaaccataa ctcgaaccac aagcacagct gcaacccaaa cactcaacac caccaccaaa 540
 accagcaatg gaagagaggc aaccacaaca tctgccagat ccagaaacaa tgccacaact 600
 caaaggcagc accaaacaac ccaggcagca gacccaaagct cccaaatcaca acatacaaag 660
 aaaagcacaa caacaacata caacacagac acatttctc caagtagtta aaaaaaaaaac 720
 tataaaataa ccatgaaaac caaaaaaaaaact agaaaagtta atttgaactc agaaaagaac 780
 acaaactat tatgaattgt ttgagcgtat atactaatga aatagcatct gtttgtcat 840
 caataatacc atcattattt aagaattaag aagaagctaa aattcaa 887

<210> 118

<211> 886

<212> DNA

<213> human metapneumo virus

<400> 118

atggaagtaa gagtggagaa cattcggca atagacatgt tcaaagccaa gatgaaaaac 60
 cgtataagaa gtagcaagtg ctatagaaat gctacactga tccttattgg attaacagca 120
 ctaagtatgg cacttaatat ttttttaatc attgattatg caacattaaa aaacatgacc 180
 aaagtggAAC actgtgttaa tatgccgccc gtagaaccaa gcaagaagac cccaatgacc 240
 tctgcagttag acttaaacac caaacccaaat ccacagcagg caacacagtt gaccacagag 300
 gactctacat ctttagcagc aacccttagag gaccatccac acacagggac aactccaaca 360
 ccagatgcaa cagtctctca gcaaaccaca gacgagcaca caacactgct gagatcaacc 420
 aacagacaga ccacccaaac aactgcagag aaaaagccaa ccagagcaac aaccaaaaaaa 480
 gaaaccacaa ctcgaaccac aagcacagct gcaacccaa cactcaacac caccaccaaa 540
 actagcaatg gaagagaggc aaccacaaca tctgccagat ccagaaacaa tgccacaact 600
 caaagcagcg atcaacaac ccaagcagca gaaccaaact cccaaatcaca acatacacag 660
 aaaagcacaa caacaacata caacacagac acatttctc taagtagtta aaaaaaaaaac 720
 tataaaataa ccatgaaaac caaaaaaaaaacta gaaaagttaa ttgactca gaaaggaaca 780
 caaacactat atgaattatt tgagcgtata tactaatgaa atagcatctg ttgtgcattc 840
 aataatacc tcattattt aagaataaga agaagctaa attcaa 886

<210> 119

<211> 236

<212> PRT

<213> human metapneumo virus

<400> 119

Met	Glu	Val	Lys	Val	Glu	Asn	Ile	Arg	Thr	Ile	Asp	Met	Leu	Lys	Ala
1					5				10				15		
Arg	Val	Lys	Asn	Arg	Val	Ala	Arg	Ser	Lys	Cys	Phe	Lys	Asn	Ala	Ser
					20				25				30		
Leu	Val	Leu	Ile	Gly	Ile	Thr	Thr	Leu	Ser	Ile	Ala	Leu	Asn	Ile	Tyr
					35				40				45		
Leu	Ile	Ile	Asn	Tyr	Lys	Met	Gln	Lys	Asn	Thr	Ser	Glu	Ser	Glu	His
					50				55				60		
His	Thr	Ser	Ser	Ser	Pro	Met	Glu	Ser	Ser	Arg	Glu	Thr	Pro	Thr	Val
					65				70				75		80
Pro	Thr	Asp	Asn	Ser	Asp	Thr	Asn	Ser	Ser	Pro	Gln	His	Pro	Thr	Gln
					85				90				95		
Gln	Ser	Thr	Glu	Gly	Ser	Thr	Leu	Tyr	Phe	Ala	Ala	Ser	Ala	Ser	Ser
					100				105				110		
Pro	Glu	Thr	Glu	Pro	Thr	Ser	Thr	Pro	Asp	Thr	Thr	Asn	Arg	Pro	Pro
					115				120				125		
Phe	Val	Asp	Thr	His	Thr	Thr	Pro	Pro	Ser	Ala	Ser	Arg	Thr	Lys	Thr
					130				135				140		
Ser	Pro	Ala	Val	His	Thr	Lys	Asn	Asn	Pro	Arg	Thr	Ser	Ser	Arg	Thr
					145				150				155		160
His	Ser	Pro	Pro	Arg	Ala	Thr	Thr	Arg	Thr	Ala	Arg	Arg	Thr	Thr	Thr
					165				170				175		

Leu	Arg	Thr	Ser	Ser	Thr	Arg	Lys	Arg	Pro	Ser	Thr	Ala	Ser	Val	Gln
180						185							190		
Pro	Asp	Ile	Ser	Ala	Thr	Thr	His	Lys	Asn	Glu	Glu	Ala	Ser	Pro	Ala
195						200							205		
Ser	Pro	Gln	Thr	Ser	Ala	Ser	Thr	Thr	Arg	Ile	Gln	Arg	Lys	Ser	Val
210						215						220			
Glu	Ala	Asn	Thr	Ser	Thr	Thr	Tyr	Asn	Gln	Thr	Ser				
225						230						235			

<210> 120
 <211> 236
 <212> PRT
 <213> human metapneumo virus

<400> 120															
Met	Glu	Val	Lys	Val	Glu	Asn	Ile	Arg	Thr	Ile	Asp	Met	Leu	Lys	Ala
1					5					10				15	
Ser	Val	Lys	Asn	Arg	Val	Ala	Arg	Ser	Lys	Cys	Phe	Lys	Asn	Ala	Ser
					20				25				30		
Leu	Val	Leu	Ile	Gly	Ile	Thr	Thr	Leu	Ser	Ile	Ala	Leu	Asn	Ile	Tyr
					35				40				45		
Leu	Ile	Ile	Asn	Tyr	Lys	Met	Gln	Lys	Asn	Thr	Ser	Glu	Ser	Glu	His
					50				55			60			
His	Thr	Ser	Ser	Ser	Pro	Met	Glu	Ser	Ser	Arg	Glu	Thr	Pro	Thr	Val
					65				70			75			80
Pro	Thr	Asp	Asn	Ser	Asp	Thr	Asn	Ser	Ser	Pro	Gln	His	Pro	Thr	Gln
					85				90			95			
Gln	Ser	Thr	Glu	Gly	Ser	Thr	Leu	Tyr	Phe	Ala	Ala	Ser	Ala	Ser	Ser
					100				105			110			
Pro	Glu	Thr	Glu	Pro	Thr	Ser	Thr	Pro	Asp	Thr	Thr	Asn	Arg	Pro	Pro
					115				120			125			
Phe	Val	Asp	Thr	His	Thr	Thr	Pro	Pro	Ser	Ala	Ser	Arg	Thr	Lys	Thr
					130				135			140			
Ser	Pro	Ala	Val	His	Thr	Lys	Asn	Asn	Pro	Arg	Thr	Ser	Ser	Arg	Thr
					145				150			155			160
His	Ser	Pro	Pro	Arg	Ala	Thr	Thr	Arg	Thr	Ala	Arg	Arg	Thr	Thr	Thr
					165				170			175			
Leu	Arg	Thr	Ser	Ser	Thr	Arg	Lys	Arg	Pro	Ser	Thr	Ala	Ser	Val	Gln
					180				185			190			
Pro	Asp	Ile	Ser	Ala	Thr	Thr	His	Lys	Asn	Glu	Glu	Ala	Ser	Pro	Ala
					195				200			205			
Ser	Pro	Gln	Thr	Ser	Ala	Ser	Thr	Thr	Arg	Ile	Gln	Arg	Lys	Ser	Val
					210				215			220			
Glu	Ala	Asn	Thr	Ser	Thr	Thr	Tyr	Asn	Gln	Thr	Ser				
					225				230			235			

<210> 121
 <211> 236
 <212> PRT
 <213> human metapneumo virus

<400> 121															
Met	Glu	Val	Lys	Val	Glu	Asn	Ile	Arg	Thr	Ile	Asp	Met	Leu	Lys	Ala
1					5					10				15	
Arg	Val	Lys	Asn	Arg	Val	Ala	Arg	Ser	Lys	Cys	Phe	Lys	Asn	Ala	Ser
					20				25			30			
Leu	Val	Leu	Ile	Gly	Ile	Thr	Thr	Leu	Ser	Ile	Ala	Leu	Asn	Ile	Tyr
					35				40			45			
Leu	Ile	Ile	Asn	Tyr	Lys	Met	Gln	Lys	Asn	Thr	Ser	Glu	Ser	Glu	His

50	55	60	
His Thr Ser Ser Ser Pro Met	Glu Ser Ser Arg Glu Thr Pro Thr Val		
65	70	75	80
Pro Thr Asp Asn Ser Asp Thr Asn Ser Ser Pro Gln His Pro Thr Gln			
85	90	95	
Gln Ser Thr Glu Gly Ser Thr Leu Tyr Phe Ala Ala Ser Ala Asn Ser			
100	105	110	
Pro Glu Thr Glu Pro Thr Ser Thr Pro Asp Thr Thr Asn Arg Pro Pro			
115	120	125	
Phe Val Asp Thr His Thr Thr Pro Pro Ser Ala Ser Arg Thr Lys Thr			
130	135	140	
Ser Pro Ala Val His Thr Lys Asn Asn Pro Arg Ile Ser Ser Arg Thr			
145	150	155	160
His Ser Pro Pro Trp Ala Thr Thr Arg Thr Ala Arg Arg Thr Thr Thr			
165	170	175	
Leu Arg Thr Ser Ser Thr Arg Lys Arg Pro Ser Thr Ala Ser Ala Gln			
180	185	190	
Pro Asp Ile Ser Ala Thr Thr His Lys Asn Glu Ala Ser Pro Ala			
195	200	205	
Ser Pro Gln Thr Ser Ala Ser Thr Thr Arg Thr Gln Arg Lys Ser Val			
210	215	220	
Glu Ala Asn Thr Ser Thr Thr Tyr Asn Gln Thr Ser			
225	230	235	

<210> 122

<211> 236

<212> PRT

<213> human metapneumo virus

<400> 122

Met Glu Val Lys Val Glu Asn Ile Arg Thr Ile Asp Met Leu Lys Ala			
1	5	10	15
Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser			
20	25	30	
Leu Val Leu Ile Gly Ile Thr Thr Leu Ser Ile Ala Leu Asn Ile Tyr			
35	40	45	
Leu Ile Ile Asn Tyr Lys Met Gln Lys Asn Thr Ser Glu Ser Glu His			
50	55	60	
His Thr Ser Ser Ser Pro Met Glu Ser Ser Arg Glu Thr Pro Thr Val			
65	70	75	80
Pro Thr Asp Asn Ser Asp Thr Asn Ser Ser Pro Gln His Pro Thr Gln			
85	90	95	
Gln Ser Thr Glu Gly Ser Thr Leu Tyr Phe Ala Ala Ser Ala Asn Ser			
100	105	110	
Pro Glu Thr Glu Pro Thr Ser Thr Pro Asp Thr Thr Asp Arg Pro Pro			
115	120	125	
Phe Val Asp Thr His Thr Thr Pro Pro Ser Ala Ser Arg Thr Lys Thr			
130	135	140	
Ser Pro Ala Val His Thr Lys Asn Asn Pro Arg Ile Ser Ser Arg Thr			
145	150	155	160
His Ser Pro Pro Trp Ala Thr Thr Arg Thr Ala Arg Arg Thr Thr Thr			
165	170	175	
Leu Arg Thr Ser Ser Thr Arg Lys Arg Pro Ser Thr Ala Ser Val Gln			
180	185	190	
Pro Asp Ile Ser Ala Thr Thr His Lys Asn Glu Ala Ser Pro Ala			
195	200	205	
Ser Pro Gln Thr Ser Ala Ser Thr Thr Arg Thr Gln Arg Lys Ser Val			
210	215	220	
Glu Ala Asn Thr Ser Thr Thr Tyr Asn Gln Thr Ser			
225	230	235	

<210> 123
 <211> 236
 <212> PRT
 <213> human metapneumo virus

<400> 123
 Met Glu Val Lys Val Glu Asn Ile Arg Thr Ile Asp Met Leu Lys Ala
 1 5 10 15
 Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser
 20 25 30
 Leu Val Leu Ile Gly Ile Thr Thr Leu Ser Ile Ala Leu Asn Ile Tyr
 35 40 45
 Leu Ile Ile Asn Tyr Lys Met Gln Lys Asn Thr Ser Glu Ser Glu His
 50 55 60
 His Thr Ser Ser Pro Met Glu Ser Ser Arg Glu Thr Pro Thr Val
 65 70 75 80
 Pro Thr Asp Asn Ser Asp Thr Asn Ser Ser Pro Gln His Pro Thr Gln
 85 90 95
 Gln Ser Thr Glu Gly Ser Thr Leu Tyr Phe Ala Ala Ser Ala Ser Ser
 100 105 110
 Pro Glu Thr Glu Pro Thr Ser Thr Pro Asp Thr Thr Asp Arg Pro Pro
 115 120 125
 Phe Val Asp Thr His Thr Thr Pro Pro Ser Ala Ser Arg Thr Lys Thr
 130 135 140
 Ser Pro Ala Val His Thr Lys Asn Asn Pro Arg Ile Ser Ser Arg Thr
 145 150 155 160
 His Ser Pro Pro Trp Ala Thr Thr Arg Thr Ala Arg Arg Thr Thr Thr
 165 170 175
 Leu Arg Thr Ser Ser Thr Arg Lys Arg Pro Ser Thr Ala Ser Val Gln
 180 185 190
 Pro Asp Ile Ser Ala Thr Thr His Lys Asn Glu Glu Ala Ser Pro Ala
 195 200 205
 Ser Pro Gln Thr Ser Ala Ser Thr Thr Arg Thr Gln Arg Lys Ser Val
 210 215 220
 Glu Ala Asn Thr Ser Thr Thr Tyr Asn Gln Thr Ser
 225 230 235

<210> 124
 <211> 236
 <212> PRT
 <213> human metapneumo virus

<400> 124
 Met Glu Val Lys Val Glu Asn Ile Arg Thr Ile Asp Met Leu Lys Ala
 1 5 10 15
 Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser
 20 25 30
 Leu Ile Leu Ile Gly Ile Thr Thr Leu Ser Ile Ala Leu Asn Ile Tyr
 35 40 45
 Leu Ile Ile Asn Tyr Thr Met Gln Glu Asn Thr Ser Glu Ser Glu His
 50 55 60
 His Thr Ser Ser Pro Met Glu Ser Ser Arg Glu Thr Pro Thr Val
 65 70 75 80
 Pro Ile Asp Asn Ser Asp Thr Asn Pro Gly Ser Gln Tyr Pro Thr Gln
 85 90 95
 Gln Ser Thr Glu Asp Ser Thr Leu His Ser Ala Ala Ser Ala Ser Ser
 100 105 110
 Pro Glu Thr Glu Pro Thr Ser Thr Pro Asp Thr Thr Ser Arg Pro Pro

115	120	125	
Phe Val Asp Thr His Thr Thr Pro Pro Ser Ala Ser Arg Thr Arg Thr			
130	135	140	
Ser Pro Ala Val His Thr Lys Asn Asn Pro Arg Val Ser Pro Arg Thr			
145	150	155	160
His Ser Pro Pro Trp Ala Met Thr Arg Thr Val Arg Gly Thr Thr Thr			
165	170	175	
Leu Arg Thr Ser Ser Thr Arg Lys Arg Leu Ser Thr Ala Ser Val Gln			
180	185	190	
Pro Asp Ser Ser Ala Thr Thr His Lys His Glu Glu Thr Ser Pro Val			
195	200	205	
Ser Pro Gln Thr Ser Ala Ser Thr Ala Arg Pro Gln Arg Lys Gly Met			
210	215	220	
Glu Ala Ser Thr Ser Thr Thr Tyr Asn Gln Thr Ser			
225	230	235	

<210> 125
 <211> 236
 <212> PRT
 <213> human metapneumo virus

<400> 125			
Met Glu Val Lys Val Glu Asn Ile Arg Thr Ile Asp Met Leu Lys Ala			
1	5	10	15
Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser			
20	25	30	
Leu Ile Leu Ile Gly Ile Thr Thr Leu Ser Ile Ala Leu Asn Ile Tyr			
35	40	45	
Leu Ile Ile Asn Tyr Thr Met Gln Glu Asn Thr Ser Glu Ser Glu His			
50	55	60	
His Thr Ser Ser Ser Pro Met Glu Ser Ser Arg Glu Thr Pro Thr Val			
65	70	75	80
Pro Met Asp Asn Ser Asp Thr Asn Pro Gly Ser Gln Tyr Pro Thr Gln			
85	90	95	
Gln Ser Thr Glu Gly Ser Thr Leu His Phe Ala Ala Ser Ala Ser Ser			
100	105	110	
Pro Glu Thr Glu Pro Thr Ser Thr Pro Asp Thr Thr Ser Arg Pro Pro			
115	120	125	
Phe Val Asp Thr His Thr Thr Pro Ser Ser Ala Ser Arg Thr Lys Thr			
130	135	140	
Ser Pro Ala Val His Thr Lys Asn Asn Leu Arg Ile Ser Pro Arg Thr			
145	150	155	160
His Ser Pro Pro Trp Ala Met Thr Arg Thr Val Arg Gly Thr Thr Thr			
165	170	175	
Leu Arg Thr Ser Ser Ile Arg Lys Arg Pro Ser Thr Ala Ser Val Gln			
180	185	190	
Pro Asp Ser Ser Ala Thr Thr His Lys His Glu Glu Ala Ser Pro Val			
195	200	205	
Ser Pro Gln Ala Ser Ala Ser Thr Ala Arg Pro Gln Arg Lys Gly Met			
210	215	220	
Glu Ala Ser Thr Ser Thr Thr Tyr Asn Gln Thr Ser			
225	230	235	

<210> 126
 <211> 236
 <212> PRT
 <213> human metapneumo virus

<400> 126

Met Glu Val Lys Val Glu Asn Ile Arg Thr Ile Asp Met Leu Lys Ala
 1 5 10 15
 Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser
 20 25 30
 Leu Ile Leu Ile Gly Ile Thr Thr Leu Ser Ile Ala Leu Asn Ile Tyr
 35 40 45
 Leu Ile Ile Asn Tyr Thr Met Gln Glu Asn Thr Ser Glu Ser Glu His
 50 55 60
 His Thr Ser Ser Ser Pro Met Glu Ser Ser Arg Glu Thr Pro Thr Val
 65 70 75 80
 Pro Met Asp Asn Ser Asp Thr Asn Pro Gly Ser Gln Tyr Pro Thr Gln
 85 90 95
 Gln Ser Thr Glu Gly Ser Thr Leu His Phe Ala Ala Ser Ala Ser Ser
 100 105 110
 Pro Glu Thr Glu Pro Thr Ser Thr Pro Asp Thr Thr Ser Arg Pro Pro
 115 120 125
 Phe Val Asp Thr His Thr Thr Pro Ser Ser Ala Ser Arg Ile Arg Thr
 130 135 140
 Ser Pro Ala Val His Thr Lys Asn Asn Leu Arg Ile Ser Pro Arg Thr
 145 150 155 160
 His Ser Pro Pro Trp Ala Met Thr Arg Thr Val Arg Gly Thr Thr
 165 170 175
 Leu Arg Thr Ser Ser Ile Arg Lys Arg Pro Ser Thr Ala Ser Val Gln
 180 185 190
 Pro Asp Ser Ser Ala Thr Thr His Lys His Glu Glu Ala Ser Pro Val
 195 200 205
 Ser Pro Gln Ala Ser Ala Ser Thr Ala Arg Pro Gln Arg Lys Gly Met
 210 215 220
 Glu Ala Ser Thr Ser Thr Tyr Asn Gln Thr Ser
 225 230 235

<210> 127
 <211> 228
 <212> PRT
 <213> Human metapneumo virus

<220>
 <221> VARIANT
 <222> 220
 <223> Xaa = unknown amino acid or other

<400> 127
 Met Glu Val Lys Val Glu Asn Ile Arg Ala Ile Asp Met Leu Lys Ala
 1 5 10 15
 Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser
 20 25 30
 Leu Ile Leu Ile Gly Ile Thr Thr Leu Ser Ile Ala Leu Asn Ile Tyr
 35 40 45
 Leu Ile Ile Asn Tyr Thr Ile Gln Lys Thr Thr Ser Glu Ser Glu His
 50 55 60
 His Thr Ser Ser Pro Pro Thr Glu Pro Asn Lys Glu Ala Ser Thr Ile
 65 70 75 80
 Ser Thr Asp Asn Pro Asp Ile Asn Pro Ser Ser Gln His Pro Thr Gln
 85 90 95
 Gln Ser Thr Glu Asn Pro Thr Leu Asn Pro Ala Ala Ser Ala Ser Pro
 100 105 110
 Ser Glu Thr Glu Pro Ala Ser Thr Pro Asp Thr Thr Asn Arg Leu Ser
 115 120 125
 Ser Val Asp Arg Ser Thr Ala Gln Pro Ser Glu Ser Arg Thr Lys Thr
 130 135 140

Lys Pro Thr Val His Thr Ile Asn Asn Pro Asn Thr Ala Ser Ser Thr
 145 150 155 160
 Gln Ser Pro Pro Arg Thr Thr Lys Ala Ile Arg Arg Ala Thr Thr
 165 170 175
 Phe Arg Met Ser Ser Thr Gly Lys Arg Pro Thr Thr Thr Leu Val Gln
 180 185 190
 Ser Asp Ser Ser Thr Thr Gln Asn His Glu Glu Thr Gly Ser Ala
 195 200 205
 Asn Pro Gln Ala Ser Ala Ser Thr Met Gln Asn Xaa His Thr Asn Asn
 210 215 220
 Ile Lys Pro Asn
 225

<210> 128
 <211> 228
 <212> PRT
 <213> human metapneumo virus

<400> 128
 Met Glu Val Lys Val Glu Asn Ile Arg Ala Ile Asp Met Leu Lys Ala
 1 5 10 15
 Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser
 20 25 30
 Leu Ile Leu Ile Gly Ile Thr Thr Leu Ser Ile Ala Leu Asn Ile Tyr
 35 40 45
 Leu Ile Ile Asn Tyr Thr Ile Gln Lys Thr Thr Ser Glu Ser Glu His
 50 55 60
 His Thr Ser Ser Pro Pro Thr Glu Ser Asn Lys Glu Thr Ser Thr Ile
 65 70 75 80
 Pro Ile Asp Asn Pro Asp Ile Asn Pro Asn Ser Gln His Pro Thr Gln
 85 90 95
 Gln Ser Thr Glu Ser Pro Thr Leu Asn Pro Ala Ala Ser Val Ser Pro
 100 105 110
 Ser Glu Thr Glu Pro Ala Ser Thr Pro Asp Thr Thr Asn Arg Leu Ser
 115 120 125
 Ser Val Asp Arg Ser Thr Thr Gln Pro Ser Glu Ser Arg Thr Lys Thr
 130 135 140
 Lys Pro Thr Val His Thr Lys Asn Asn Pro Ser Thr Val Ser Arg Thr
 145 150 155 160
 Gln Ser Pro Leu Arg Ala Thr Thr Lys Ala Val Leu Arg Ala Thr Ala
 165 170 175
 Phe Arg Thr Ser Ser Thr Arg Lys Arg Pro Thr Thr Ser Val Gln
 180 185 190
 Ser Asp Ser Ser Thr Thr Gln Asn His Glu Glu Thr Ser Ser Ala
 195 200 205
 Asn Pro Gln Ala Ser Ala Ser Thr Met Gln Ser Gln His Thr Asn Asn
 210 215 220
 Ile Lys Pro Asn
 225

<210> 129
 <211> 228
 <212> PRT
 <213> human metapneumo virus

<400> 129
 Met Glu Val Lys Val Glu Asn Ile Arg Ala Val Asp Met Leu Lys Ala
 1 5 10 15
 Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser

20	25	30
Leu Ile Leu Val Gly Ile Thr Thr	Leu Ser Ile Ala Leu Asn Ile Tyr	
35	40	45
Leu Ile Val Asn Tyr Thr Ile Gln Lys Thr Thr	Ser Glu Ser Glu His	
50	55	60
His Thr Ser Ser Ser Pro Thr Glu Ser Asn Lys Gly	Thr Ser Thr Ile	
65	70	75
Pro Thr Asp Asn Pro Asp Ile Asn Pro Asn Ser Gln His	Pro Thr Gln	
85	90	95
Gln Ser Thr Glu Ser Pro Thr Leu Asn Thr Ala Ala	Ser Val Ser Pro	
100	105	110
Ser Glu Thr Glu Pro Ala Ser Thr Pro Asp Thr Thr	Asn Arg Leu Ser	
115	120	125
Ser Ala Asp Arg Ser Thr Thr Gln Pro Ser Glu Ser Arg	Thr Lys Thr	
130	135	140
Lys Leu Thr Val His Thr Lys Asn Asn Leu Ser Thr Ala Ser Arg	Thr	
145	150	155
Gln Ser Pro Pro Arg Ala Thr Thr Lys Ala Val Leu Arg Asp	Thr Ala	
165	170	175
Phe His Thr Ser Ser Thr Gly Lys Arg Pro Thr Thr Thr	Ser Val Gln	
180	185	190
Ser Gly Ser Ser Thr Thr Thr Gln Asn His Glu Glu Thr Ser Ser Ser		
195	200	205
Asn Pro Gln Ala Ser Ala Ser Thr Met Gln Asp Gln Asp Thr Asn Asn		
210	215	220
Thr Lys Gln Asn		
225		

<210> 130
 <211> 228
 <212> PRT
 <213> human metapneumo virus

<220>
 <221> VARIANT
 <222> 81
 <223> Xaa = Any Amino Acid

<400> 130		
Met Glu Val Lys Val Glu Asn Ile Arg Ala Val Asp Met Leu Lys Ala		
1	5	10
Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser		
20	25	30
Leu Ile Leu Val Gly Ile Thr Thr Leu Ser Ile Ala Leu Asn Ile Tyr		
35	40	45
Leu Ile Val Asn Tyr Thr Ile Gln Lys Thr Thr Ser Glu Ser Glu His		
50	55	60
His Thr Ser Ser Ser Pro Thr Glu Ser Asn Lys Gly Thr Ser Thr Ile		
65	70	75
Xaa Thr Asp Asn Pro Asp Ile Asn Pro Asn Ser Gln His Pro Thr Gln		
85	90	95
Gln Ser Thr Glu Ser Pro Thr Leu Asn Thr Ala Ala Ser Val Ser Pro		
100	105	110
Ser Glu Thr Glu Pro Ala Ser Thr Pro Asp Thr Thr Asn Arg Leu Ser		
115	120	125
Ser Ala Asp Arg Ser Thr Thr Gln Pro Ser Glu Ser Arg Thr Lys Thr		
130	135	140
Lys Leu Thr Val His Thr Lys Asn Asn Leu Ser Thr Ala Ser Arg Thr		
145	150	155
Gln Ser Pro Pro Arg Ala Thr Thr Lys Ala Val Leu Arg Asp Thr Ala		

165	170	175
Phe His Thr Ser Ser Thr Gly Lys Arg Pro Thr Thr Ser Val Gln		
180	185	190
Ser Gly Ser Ser Thr Thr Gln Asn His Glu Glu Thr Ser Ser Ser		
195	200	205
Asn Pro Gln Ala Ser Ala Ser Thr Met Gln Asp Gln Asp Thr Asn Asn		
210	215	220
Thr Lys Gln Asn		
225		

<210> 131
 <211> 228
 <212> PRT
 <213> Human metapneumo virus

<220>
 <221> VARIANT
 <222> 220
 <223> Xaa = unknown amino acid or other

<400> 131			
Met Glu Val Lys Val Glu Asn Ile Arg Ala Ile Asp Met Leu Lys Ala			
1	5	10	15
Arg Met Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser			
20	25	30	
Leu Ile Leu Ile Gly Ile Thr Thr Leu Ser Ile Ala Leu Asn Ile Tyr			
35	40	45	
Leu Ile Ile Asn Tyr Thr Ile Gln Lys Thr Ser Glu Ser Glu His			
50	55	60	
His Thr Ser Ser Pro Pro Thr Glu Ser Asn Lys Glu Thr Ser Thr Ile			
65	70	75	80
Pro Ile Asp Asn Pro Asp Ile Asn Pro Asn Ser Gln His Pro Thr Gln			
85	90	95	
Gln Ser Thr Glu Ser Leu Thr Leu Asn Pro Ala Ala Ser Val Ser Pro			
100	105	110	
Ser Glu Thr Glu Pro Ala Ser Thr Pro Asp Thr Thr Asn Arg Leu Ser			
115	120	125	
Ser Val Asp Arg Ser Thr Thr Gln Pro Ser Glu Ser Arg Thr Lys Thr			
130	135	140	
Lys Leu Thr Val His Lys Lys Asn Ile Pro Ser Thr Val Ser Arg Thr			
145	150	155	160
Gln Ser Ser Ile Arg Ala Thr Thr Lys Ala Val Leu Arg Ala Thr Ala			
165	170	175	
Phe Arg Thr Ser Ser Thr Gly Glu Arg Pro Thr Thr Ser Val Gln			
180	185	190	
Ser Asp Ser Ser Thr Thr Gln Asn His Glu Glu Thr Gly Ser Ala			
195	200	205	
Asn Pro Gln Ala Ser Ala Ser Thr Met Gln Asn Xaa His Thr Asn Ile			
210	215	220	
Val Lys Pro Asn			
225			

<210> 132
 <211> 228
 <212> PRT
 <213> Human metapneumovirus

<220>
 <221> VARIANT

<222> 220

<223> Xaa = unknown amino acid or other

<400> 132

Met Glu Val Lys Val Glu Asn Ile Arg Ala Ile Asp Met Leu Lys Ala
1 5 10 15
Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser
20 25 30
Leu Ile Leu Ile Gly Ile Thr Thr Leu Ser Ile Ala Leu Asn Ile Tyr
35 40 45
Leu Ile Ile Asn Tyr Thr Ile Gln Lys Thr Thr Ser Glu Ser Glu His
50 55 60
His Thr Ser Ser Pro Pro Thr Glu Ser Asn Lys Glu Thr Ser Thr Ile
65 70 75 80
Ser Ile Asp Asn Pro Asp Ile Asn Pro Asn Ser Gln His Pro Thr Gln
85 90 95
Gln Ser Thr Glu Ser Leu Thr Leu Ser Pro Thr Ala Ser Val Ser Pro
100 105 110
Ser Glu Thr Glu Pro Ala Ser Thr Ser Asp Thr Thr Ser Arg Leu Ser
115 120 125
Ser Val Asp Arg Ser Thr Thr Gln Pro Ser Glu Ser Arg Ala Arg Thr
130 135 140
Lys Pro Thr Val His Lys Asn Ile Pro Ser Thr Val Ser Arg Thr
145 150 155 160
Gln Ser Pro Leu Arg Ala Thr Thr Lys Ala Val Leu Arg Ala Thr Ala
165 170 175
Phe Arg Thr Ser Ser Thr Gly Glu Gly Pro Thr Thr Ser Val Gln
180 185 190
Ser Asp Ser Ser Thr Thr Gln Asn His Glu Glu Thr Gly Ser Ala
195 200 205
Asn Pro Gln Ala Ser Ala Ser Thr Met Gln Asn Xaa His Thr Asn Ile
210 215 220
Val Lys Pro Asn
225

<210> 133

<211> 228

<212> PRT

<213> Human metapneumovirus

<220>

<221> VARIANT

<222> 220

<223> Xaa = unknown amino acid or other

<400> 133

Met Glu Val Lys Val Glu Asn Ile Arg Ala Ile Asp Met Leu Lys Ala
1 5 10 15
Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser
20 25 30
Leu Ile Leu Ile Gly Ile Thr Thr Leu Ser Ile Ala Leu Asn Ile Tyr
35 40 45
Leu Ile Ile Asn Tyr Thr Ile Gln Lys Thr Thr Ser Glu Ser Glu His
50 55 60
His Thr Ser Ser Pro Pro Thr Glu Ser Asn Lys Glu Ala Ser Thr Ile
65 70 75 80
Ser Thr Asp Asn Pro Asp Ile Asn Pro Asn Ser Gln His Pro Thr Gln
85 90 95
Gln Ser Thr Glu Asn Pro Thr Leu Asn Pro Ala Ala Ser Val Ser Ser
100 105 110

Ser Glu Thr Glu Pro Ala Ser Thr Pro Asp Thr Thr Asn Arg Leu Ser
 115 120 125
 Ser Val Asp Arg Ser Thr Ala Gln Pro Ser Glu Ser Arg Thr Lys Thr
 130 135 140
 Lys Pro Thr Val His Thr Arg Asn Asn Pro Ser Thr Ala Ser Ser Thr
 145 150 155 160
 Gln Ser Pro Pro Arg Val Thr Thr Lys Ala Ile Leu Arg Ala Thr Val
 165 170 175
 Phe Arg Met Ser Ser Thr Gly Lys Arg Pro Ala Thr Thr Leu Val Gln
 180 185 190
 Ser Asp Ser Ser Thr Thr Thr Gln Asn His Glu Glu Thr Gly Ser Ala
 195 200 205
 Asn Ser Gln Ala Ser Ala Ser Thr Met Gln Asn Xaa His Ser Asn Asn
 210 215 220
 Ile Lys Pro Asn
 225

<210> 134
 <211> 228
 <212> PRT
 <213> human metapneumo virus

<400> 134
 Met Glu Val Lys Val Glu Asn Ile Arg Ala Ile Asp Met Leu Lys Ala
 1 5 10 15
 Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser
 20 25 30
 Leu Ile Leu Ile Gly Ile Thr Thr Leu Ser Ile Ala Leu Asn Ile Tyr
 35 40 45
 Leu Ile Ile Asn Tyr Thr Ile Gln Lys Thr Thr Ser Glu Ser Glu His
 50 55 60
 His Thr Ser Ser Pro Pro Thr Glu Ser Asn Lys Glu Thr Ser Thr Ile
 65 70 75 80
 Ser Ile Asp Asn Ser Asp Ile Asn Pro Asn Ser Gln His Pro Thr Gln
 85 90 95
 Gln Ser Thr Glu Ser Leu Thr Leu Ser Pro Thr Ala Ser Val Ser Pro
 100 105 110
 Ser Glu Thr Glu Pro Ala Ser Thr Ser Asp Thr Thr Asn Arg Leu Ser
 115 120 125
 Ser Val Asp Arg Ser Thr Thr Gln Pro Ser Glu Ser Arg Ala Arg Thr
 130 135 140
 Lys Pro Thr Val His Lys Lys Asn Ile Pro Ser Thr Val Ser Arg Thr
 145 150 155 160
 Gln Ser Pro Leu Arg Ala Thr Thr Lys Ala Val Leu Arg Ala Thr Ala
 165 170 175
 Phe Arg Met Ser Ser Thr Gly Glu Gly Pro Thr Thr Ser Val Gln
 180 185 190
 Ser Asp Ser Ser Thr Thr Thr Gln Asn His Glu Glu Thr Gly Ser Ala
 195 200 205
 Asn Pro Gln Ala Ser Ala Ser Thr Met Gln Asn Gln His Thr Asn Ile
 210 215 220
 Ala Lys Pro Asn
 225

<210> 135
 <211> 228
 <212> PRT
 <213> human metapneumo virus

<400> 135

Met Glu Val Lys Val Glu Asn Ile Arg Ala Ile Asp Met Leu Lys Ala
 1 5 10 15
 Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser
 20 25 30
 Leu Ile Leu Ile Gly Ile Thr Thr Leu Ser Ile Ala Leu Asn Ile Tyr
 35 40 45
 Leu Ile Ile Asn Tyr Thr Ile Gln Lys Thr Thr Ser Glu Ser Glu His
 50 55 60
 His Thr Ser Ser Pro Pro Thr Glu Ser Asn Lys Glu Thr Ser Thr Ile
 65 70 75 80
 Pro Ile Asp Asn Pro Asp Ile Asn Pro Asn Ser Gln His Pro Thr Gln
 85 90 95
 Gln Ser Thr Glu Ser Leu Thr Leu Tyr Pro Thr Ser Ser Val Ser Ser
 100 105 110
 Ser Glu Thr Glu Pro Ala Ser Thr Pro Gly Ile Thr Asn His Leu Ser
 115 120 125
 Phe Val Asp Arg Ser Thr Thr Gln Pro Ser Glu Ser Arg Thr Lys Thr
 130 135 140
 Asn Arg Thr Val His Lys Lys Asn Ile Ser Ser Thr Val Ser Arg Thr
 145 150 155 160
 Gln Ser Pro Pro Arg Thr Thr Ala Lys Ala Val Pro Arg Ala Thr Ala
 165 170 175
 Leu Arg Thr Ser Ser Thr Gly Glu Arg Pro Thr Thr Pro Val Gln
 180 185 190
 Pro Asp Ser Ser Thr Thr Gln Asn His Glu Glu Thr Gly Ser Ala
 195 200 205
 Asn Pro Gln Ala Ser Ala Ser Thr Met Gln Asn Gln His Thr Asn Ile
 210 215 220
 Ala Arg Pro Asn
 225

<210> 136
 <211> 228
 <212> PRT
 <213> human metapneumo virus

<400> 136

Met Glu Val Lys Val Glu Asn Ile Arg Ala Ile Asp Met Leu Lys Ala
 1 5 10 15
 Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser
 20 25 30
 Leu Ile Leu Ile Gly Ile Thr Thr Leu Ser Ile Ala Leu Asn Ile Tyr
 35 40 45
 Leu Ile Ile Asn Tyr Thr Ile Gln Lys Thr Thr Ser Glu Ser Glu His
 50 55 60
 His Thr Ser Ser Pro Pro Thr Glu Ser Asn Lys Glu Thr Ser Thr Ile
 65 70 75 80
 Pro Ile Asp Asn Pro Asp Ile Asn Pro Asn Ser Gln His Pro Thr Gln
 85 90 95
 Gln Ser Ala Glu Ser Leu Thr Leu Tyr Pro Thr Ser Ser Val Ser Ser
 100 105 110
 Ser Glu Thr Glu Pro Ala Ser Thr Pro Gly Ile Thr Asn His Leu Ser
 115 120 125
 Phe Val Asp Arg Ser Thr Thr Gln Pro Ser Glu Ser Arg Thr Lys Thr
 130 135 140
 Asn Arg Thr Val His Lys Lys Asn Ile Ser Ser Thr Val Ser Arg Thr
 145 150 155 160
 Gln Ser Pro Pro Arg Thr Thr Ala Lys Ala Val Pro Arg Ala Thr Ala
 165 170 175

Leu Arg Thr Ser Ser Thr Gly Glu Arg Pro Thr Thr Pro Val Gln
 180 185 190
 Pro Asp Ser Ser Thr Thr Gln Asn His Glu Glu Thr Gly Ser Ala
 195 200 205
 Asn Pro Gln Ala Ser Ala Ser Thr Met Gln Asn Gln His Thr Asn Ile
 210 215 220
 Ala Arg Pro Asn
 225

<210> 137
 <211> 228
 <212> PRT
 <213> human metapneumo virus

<400> 137
 Met Glu Val Lys Val Glu Asn Ile Arg Ala Ile Asp Met Leu Lys Ala
 1 5 10 15
 Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser
 20 25 30
 Leu Ile Leu Ile Gly Ile Thr Thr Leu Ser Ile Ala Leu Asn Ile Tyr
 35 40 45
 Leu Ile Ile Asn Tyr Thr Ile Gln Lys Thr Thr Ser Glu Ser Glu His
 50 55 60
 His Thr Ser Ser Pro Pro Thr Glu Ser Asn Lys Glu Thr Ser Thr Ile
 65 70 75 80
 Pro Ile Asp Asn Pro Asp Ile Asn Pro Asn Ser Gln His Pro Thr Gln
 85 90 95
 Gln Ser Thr Glu Ser Leu Thr Leu Tyr Pro Thr Ser Ser Val Ser Ser
 100 105 110
 Ser Glu Thr Glu Pro Ala Ser Thr Pro Gly Ile Thr Asn His Leu Ser
 115 120 125
 Phe Val Asp Arg Ser Thr Thr Gln Pro Ser Glu Ser Arg Thr Lys Thr
 130 135 140
 Asn Arg Thr Val His Lys Lys Asn Ile Ser Ser Thr Val Ser Arg Thr
 145 150 155 160
 Gln Ser Pro Pro Arg Thr Thr Ala Lys Ala Val Pro Arg Ala Thr Ala
 165 170 175
 Leu Arg Thr Ser Ser Thr Gly Glu Arg Pro Thr Thr Pro Val Gln
 180 185 190
 Pro Asp Ser Ser Thr Thr Gln Asn His Glu Glu Thr Gly Ser Ala
 195 200 205
 Asn Pro Gln Ala Ser Ala Ser Thr Met Gln Asn Gln His Thr Asn Ile
 210 215 220
 Ala Arg Pro Asn
 225

<210> 138
 <211> 228
 <212> PRT
 <213> human metapneumo virus

<400> 138
 Met Glu Val Lys Val Glu Asn Ile Arg Ala Ile Asp Met Leu Lys Ala
 1 5 10 15
 Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser
 20 25 30
 Leu Ile Leu Ile Gly Ile Thr Thr Leu Ser Ile Ala Leu Asn Ile Tyr
 35 40 45
 Leu Ile Ile Asn Tyr Thr Ile Gln Gln Thr Ser Glu Ser Glu His

50	55	60	
His Thr Ser Ser Pro Pro Thr Glu Ser Asn Lys Glu Ala Ser Thr Ile			
65	70	75	80
Ser Thr Asp Asn Pro Asp Ile Asn Pro Asn Ser Gln His Pro Thr Gln			
85	90	95	
Gln Ser Thr Glu Asn Pro Thr Leu Asn Pro Ala Ala Ser Ala Ser Pro			
100	105	110	
Ser Glu Thr Glu Ser Ala Ser Thr Pro Asp Thr Thr Asn Arg Leu Ser			
115	120	125	
Ser Val Asp Arg Ser Thr Val Gln Pro Ser Glu Asn Arg Thr Lys Thr			
130	135	140	
Lys Leu Thr Val His Thr Arg Asn Asn Leu Ser Thr Ala Ser Ser Thr			
145	150	155	160
Gln Ser Pro Pro Arg Ala Thr Thr Lys Ala Ile Arg Arg Ala Thr Thr			
165	170	175	
Leu Arg Met Ser Ser Thr Gly Arg Arg Pro Thr Thr Thr Leu Val Gln			
180	185	190	
Ser Asp Ser Ser Thr Thr Thr Gln Asn His Glu Glu Thr Gly Ser Ala			
195	200	205	
Asn Pro Gln Ala Ser Ala Ser Thr Met Gln Asn Gln His Thr Asn Asn			
210	215	220	
Ile Lys Pro Asn			
225			

<210> 139
 <211> 228
 <212> PRT
 <213> human metapneumo virus

<400> 139			
Met Glu Val Lys Val Glu Asn Ile Arg Ala Ile Asp Met Leu Lys Ala			
1	5	10	15
Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser			
20	25	30	
Leu Ile Leu Ile Gly Ile Thr Thr Leu Ser Ile Ala Leu Asn Ile Tyr			
35	40	45	
Leu Ile Ile Asn Tyr Thr Ile Gln Lys Thr Thr Ser Glu Ser Glu His			
50	55	60	
His Thr Ser Ser Pro Pro Thr Glu Ser Asn Lys Glu Ala Ser Thr Ile			
65	70	75	80
Ser Thr Asp Asn Pro Asp Ile Asn Pro Asn Ser Gln His Pro Thr Gln			
85	90	95	
Gln Ser Thr Glu Asn Pro Thr Leu Asn Pro Ala Ala Ser Ala Ser Pro			
100	105	110	
Ser Glu Thr Glu Ser Ala Ser Thr Pro Asp Thr Thr Asn Arg Leu Ser			
115	120	125	
Ser Val Asp Arg Ser Thr Val Gln Pro Ser Glu Asn Arg Thr Lys Thr			
130	135	140	
Lys Leu Thr Val His Thr Arg Asn Asn Leu Ser Thr Ala Ser Ser Thr			
145	150	155	160
Gln Ser Pro Pro Arg Ala Thr Thr Lys Ala Ile Arg Arg Ala Thr Thr			
165	170	175	
Leu Arg Met Ser Ser Thr Gly Arg Arg Pro Thr Thr Thr Leu Val Gln			
180	185	190	
Ser Asp Ser Ser Thr Thr Thr Gln Asn His Glu Glu Thr Gly Ser Ala			
195	200	205	
Asn Pro Gln Ala Ser Ala Ser Thr Met Gln Asn Gln His Thr Asn Asn			
210	215	220	
Ile Lys Pro Asn			
225			

<210> 140
<211> 231
<212> PRT
<213> Human metapneumo virus

<220>
<221> VARIANT
<222> 225
<223> Xaa = unknown amino acid or other

<400> 140
Met Glu Val Arg Val Glu Asn Ile Arg Ala Ile Asp Met Phe Lys Ala
1 5 10 15
Lys Ile Lys Asn Arg Ile Arg Ser Ser Arg Cys Tyr Arg Asn Ala Thr
20 25 30
Leu Ile Leu Ile Gly Leu Thr Ala Leu Ser Met Ala Leu Asn Ile Phe
35 40 45
Leu Ile Ile Asp His Ala Thr Leu Arg Asn Met Ile Lys Thr Glu Asn
50 55 60
Cys Ala Asn Met Pro Ser Ala Glu Pro Ser Lys Lys Thr Pro Met Thr
65 70 75 80
Ser Thr Ala Gly Pro Asn Thr Lys Pro Asn Pro Gln Gln Ala Thr Gln
85 90 95
Trp Thr Thr Glu Asn Ser Thr Ser Pro Val Ala Thr Pro Glu Gly His
100 105 110
Pro Tyr Thr Gly Thr Thr Gln Thr Ser Asp Thr Thr Ala Pro Gln Gln
115 120 125
Thr Thr Asp Lys His Thr Ala Pro Leu Lys Ser Thr Asn Glu Gln Ile
130 135 140
Thr Gln Thr Thr Glu Lys Lys Thr Ile Arg Ala Thr Thr Gln Lys
145 150 155 160
Arg Glu Lys Gly Lys Glu Asn Thr Asn Gln Thr Thr Ser Thr Ala Ala
165 170 175
Thr Gln Thr Thr Asn Thr Thr Asn Gln Ile Arg Asn Ala Ser Glu Thr
180 185 190
Ile Thr Thr Ser Asp Arg Pro Arg Thr Asp Thr Thr Thr Gln Ser Ser
195 200 205
Glu Gln Thr Thr Arg Ala Thr Asp Pro Ser Ser Pro Pro His His Ala
210 215 220
Xaa Arg Gly Ala Lys Leu Lys
225 230

<210> 141
<211> 231
<212> PRT
<213> human metapneumo virus

<400> 141
Met Glu Val Arg Val Glu Asn Ile Arg Ala Ile Asp Met Phe Lys Ala
1 5 10 15
Lys Ile Lys Asn Arg Ile Arg Ser Ser Arg Cys Tyr Arg Asn Ala Thr
20 25 30
Leu Ile Leu Ile Gly Leu Thr Ala Leu Ser Met Ala Leu Asn Ile Phe
35 40 45
Leu Ile Ile Asp His Ala Thr Leu Arg Asn Met Ile Lys Thr Glu Asn
50 55 60
Cys Ala Asn Met Pro Ser Ala Glu Pro Ser Lys Lys Thr Pro Met Thr
65 70 75 80

Ser Thr Ala Gly Pro Ser Thr Glu Pro Asn Pro Gln Gln Ala Thr Gln
 85 90 95
 Trp Thr Thr Glu Asn Ser Thr Ser Pro Ala Ala Thr Leu Glu Ser His
 100 105 110
 Pro Tyr Thr Gly Thr Thr Gln Thr Pro Asp Ile Thr Ala Pro Gln Gln
 115 120 125
 Thr Thr Asp Lys His Thr Ala Leu Pro Lys Ser Thr Asn Glu Gln Ile
 130 135 140
 Thr Gln Thr Thr Glu Lys Lys Thr Thr Arg Ala Thr Thr Gln Lys
 145 150 155 160
 Arg Glu Lys Glu Lys Glu Asn Thr Asn Gln Thr Thr Ser Thr Ala Ala
 165 170 175
 Thr Gln Thr Thr Asn Thr Asn Gln Thr Arg Asn Ala Ser Glu Thr
 180 185 190
 Ile Thr Thr Ser Asp Arg Pro Arg Ile Asp Thr Thr Gln Ser Ser
 195 200 205
 Asp Gln Thr Thr Arg Ala Thr Asp Pro Ser Ser Pro Pro His His Ala
 210 215 220
 Gln Ser Gly Ala Lys Pro Lys
 225 230

<210> 142
 <211> 231
 <212> PRT
 <213> human metapneumo virus

<400> 142
 Met Glu Val Arg Val Glu Asn Ile Arg Ala Ile Asp Met Phe Lys Ala
 1 5 10 15
 Lys Ile Lys Asn Arg Ile Arg Ser Ser Arg Cys Tyr Arg Asn Ala Thr
 20 25 30
 Leu Ile Leu Ile Gly Leu Thr Ala Leu Ser Met Ala Leu Asn Ile Phe
 35 40 45
 Leu Ile Ile Asp His Ala Thr Leu Arg Asn Met Ile Lys Thr Glu Asn
 50 55 60
 Cys Ala Asn Met Pro Pro Ala Glu Pro Ser Lys Lys Thr Pro Met Thr
 65 70 75 80
 Ser Thr Ala Gly Pro Asn Thr Lys Pro Asn Pro Gln Gln Ala Thr Gln
 85 90 95
 Trp Thr Thr Glu Asn Ser Thr Phe Pro Ala Ala Thr Ser Glu Gly His
 100 105 110
 Leu His Thr Gly Thr Thr Gln Thr Pro Asp Thr Thr Ala Pro Gln Gln
 115 120 125
 Thr Thr Asp Lys His Thr Ala Leu Pro Lys Ser Thr Asn Glu Gln Ile
 130 135 140
 Thr Gln Thr Thr Glu Lys Lys Thr Thr Arg Ala Thr Thr Gln Arg
 145 150 155 160
 Arg Glu Lys Gly Lys Glu Asn Thr Asn Gln Thr Thr Ser Thr Ala Ala
 165 170 175
 Thr Gln Thr Thr Asn Thr Asn Gln Ile Arg Asn Ala Ser Glu Thr
 180 185 190
 Ile Thr Thr Ser Asp Arg Pro Arg Thr Asp Ser Thr Thr Gln Ser Ser
 195 200 205
 Glu Gln Thr Thr Arg Ala Thr Asp Pro Ser Ser Pro Pro His His Ala
 210 215 220
 Gln Gly Ser Ala Lys Pro Lys
 225 230

<210> 143

<211> 231
<212> PRT
<213> human metapneumo virus

<400> 143

Met	Glu	Val	Arg	Val	Glu	Asn	Ile	Arg	Ala	Ile	Asp	Met	Phe	Lys	Ala
1				5					10					15	
Lys	Ile	Lys	Asn	Arg	Ile	Arg	Ser	Ser	Arg	Cys	Tyr	Arg	Asn	Ala	Thr
				20				25				30			
Leu	Ile	Leu	Ile	Gly	Leu	Thr	Ala	Leu	Ser	Met	Ala	Leu	Asn	Ile	Phe
				35				40				45			
Leu	Ile	Ile	Asp	His	Ala	Thr	Leu	Arg	Asn	Met	Ile	Lys	Thr	Glu	Asn
				50				55				60			
Cys	Ala	Asn	Met	Pro	Pro	Ala	Glu	Pro	Ser	Arg	Lys	Thr	Pro	Met	Thr
				65				70			75			80	
Ser	Thr	Ala	Gly	Pro	Asn	Thr	Lys	Pro	Asn	Pro	Gln	Gln	Ala	Thr	Gln
				85				90				95			
Trp	Thr	Thr	Glu	Asn	Ser	Thr	Ser	Pro	Ala	Ala	Thr	Pro	Glu	Gly	His
				100				105				110			
Leu	His	Thr	Gly	Thr	Thr	Gln	Thr	Pro	Asp	Thr	Thr	Ala	Pro	Gln	Gln
				115				120				125			
Thr	Thr	Asp	Lys	His	Thr	Ala	Leu	Pro	Lys	Ser	Thr	Asn	Glu	Gln	Ile
				130				135				140			
Thr	Gln	Ala	Thr	Thr	Glu	Lys	Lys	Thr	Arg	Glu	Thr	Thr	Gln	Arg	
				145				150			155			160	
Arg	Glu	Lys	Gly	Lys	Glu	Asn	Thr	Asn	Gln	Thr	Thr	Ser	Thr	Ala	Ala
				165				170				175			
Thr	Gln	Thr	Thr	Asn	Thr	Thr	Asn	Gln	Ile	Arg	Asn	Ala	Ser	Glu	Thr
				180				185				190			
Ile	Thr	Thr	Ser	Asp	Arg	Pro	Arg	Thr	Asp	Ser	Thr	Thr	Gln	Ser	Ser
				195				200				205			
Glu	Gln	Thr	Thr	Gln	Ala	Thr	Asp	Pro	Ser	Ser	Pro	Ala	His	His	Ala
				210				215				220			
Gln	Gly	Ser	Ala	Lys	Pro	Lys									
				225				230							

<210> 144
<211> 231
<212> PRT
<213> human metapneumo virus

<400> 144

Met	Glu	Val	Arg	Val	Glu	Asn	Ile	Arg	Ala	Ile	Asp	Met	Phe	Lys	Ala
1				5				10					15		
Lys	Ile	Lys	Asn	Arg	Ile	Arg	Ser	Ser	Arg	Cys	Tyr	Arg	Asn	Ala	Thr
				20				25				30			
Leu	Ile	Leu	Ile	Gly	Leu	Thr	Ala	Leu	Ser	Met	Ala	Leu	Asn	Ile	Phe
				35				40				45			
Leu	Ile	Ile	Asp	His	Ala	Thr	Leu	Arg	Asn	Met	Ile	Lys	Thr	Glu	Asn
				50				55				60			
Cys	Ala	Asn	Met	Pro	Pro	Ala	Glu	Pro	Ser	Lys	Lys	Thr	Pro	Met	Thr
				65				70			75			80	
Ser	Thr	Ala	Gly	Leu	Asn	Thr	Lys	Pro	Asn	Pro	Gln	Gln	Ala	Thr	Gln
				85				90				95			
Trp	Thr	Thr	Glu	Asn	Ser	Thr	Ser	Pro	Ala	Ala	Thr	Pro	Glu	Gly	His
				100				105				110			
Leu	His	Thr	Gly	Thr	Thr	Gln	Thr	Pro	Asp	Thr	Thr	Ala	Pro	Gln	Gln
				115				120				125			
Thr	Thr	Asp	Lys	His	Thr	Ala	Leu	Pro	Lys	Ser	Thr	Asn	Glu	Gln	Ile
				130				135				140			

Thr Gln Thr Thr Glu Lys Lys Thr Thr Arg Ala Thr Thr Gln Arg
 145 150 155 160
 Arg Glu Lys Gly Lys Glu Asn Thr Asn Gln Thr Thr Ser Thr Ala Ala
 165 170 175
 Thr Gln Thr Thr Asn Thr Thr Asn Gln Ile Arg Asn Ala Ser Glu Thr
 180 185 190
 Ile Thr Thr Ser Asp Arg Pro Arg Thr Asp Ser Thr Thr Gln Ser Ser
 195 200 205
 Glu Gln Thr Thr Arg Ala Thr Asp Pro Ser Ser Pro Pro His His Ala
 210 215 220
 Gln Gly Ser Ala Lys Pro Lys
 225 230

<210> 145
 <211> 231
 <212> PRT
 <213> human metapneumo virus

<400> 145
 Met Glu Val Arg Val Glu Asn Ile Arg Ala Ile Asp Met Phe Lys Ala
 1 5 10 15
 Lys Ile Lys Asn Arg Ile Arg Ser Ser Arg Cys Tyr Arg Asn Ala Thr
 20 25 30
 Leu Ile Leu Ile Gly Leu Thr Ala Leu Ser Met Ala Leu Asn Ile Phe
 35 40 45
 Leu Ile Ile Asp His Ala Thr Leu Arg Asn Met Ile Lys Thr Glu Asn
 50 55 60
 Cys Ala Asn Met Pro Pro Ala Glu Pro Ser Lys Lys Thr Pro Met Thr
 65 70 75 80
 Ser Thr Ala Gly Pro Asn Thr Lys Pro Asn Pro Gln Gln Ala Thr Gln
 85 90 95
 Trp Thr Thr Glu Asn Ser Thr Ser Pro Ala Ala Thr Pro Glu Gly His
 100 105 110
 Leu His Thr Gly Thr Thr Gln Thr Pro Asp Thr Thr Ala Pro Gln Gln
 115 120 125
 Thr Thr Asp Lys His Thr Ala Leu Pro Lys Ser Thr Asn Glu Gln Ile
 130 135 140
 Thr Gln Thr Thr Glu Lys Lys Thr Thr Arg Ala Thr Thr Gln Arg
 145 150 155 160
 Arg Glu Lys Gly Lys Glu Asn Thr Asn Gln Thr Thr Ser Thr Ala Ala
 165 170 175
 Thr Gln Thr Thr Asn Thr Thr Asn Gln Ile Arg Asn Ala Ile Glu Thr
 180 185 190
 Ile Thr Thr Ser Asp Arg Pro Arg Thr Asp Ser Thr Thr Gln Ser Ser
 195 200 205
 Glu Gln Thr Thr Arg Ala Thr Asp Pro Ser Ser His Pro His His Ala
 210 215 220
 Gln Gly Ser Ala Lys Pro Lys
 225 230

<210> 146
 <211> 236
 <212> PRT
 <213> human metapneumo virus

<400> 146
 Met Glu Val Arg Val Glu Asn Ile Arg Ala Ile Asp Met Phe Lys Ala
 1 5 10 15
 Lys Met Lys Asn Arg Ile Arg Ser Ser Lys Cys Tyr Arg Asn Ala Thr

20	25	30
Leu Ile Leu Ile Gly Leu Thr Ala Leu Ser Met Ala Leu Asn Ile Phe		
35	40	45
Leu Ile Ile Asp Tyr Ala Met Leu Lys Asn Met Thr Lys Val Glu His		
50	55	60
Cys Val Asn Met Pro Pro Val Glu Pro Ser Lys Lys Thr Pro Met Thr		
65	70	75
Ser Ala Val Asp Leu Asn Thr Lys Pro Asn Pro Gln Gln Ala Thr Gln		
85	90	95
Leu Ala Ala Glu Asp Ser Thr Ser Leu Ala Ala Thr Ser Glu Asp His		
100	105	110
Leu His Thr Gly Thr Thr Pro Thr Pro Asp Ala Thr Val Ser Gln Gln		
115	120	125
Thr Thr Asp Glu Tyr Thr Thr Leu Leu Arg Ser Thr Asn Arg Gln Thr		
130	135	140
Thr Gln Thr Thr Thr Glu Lys Lys Pro Thr Gly Ala Thr Thr Lys Lys		
145	150	155
Glu Thr Thr Thr Arg Thr Thr Ser Thr Ala Ala Thr Gln Thr Leu Asn		
165	170	175
Thr Thr Asn Gln Thr Ser Tyr Val Arg Glu Ala Thr Thr Thr Ser Ala		
180	185	190
Arg Ser Arg Asn Ser Ala Thr Thr Gln Ser Ser Asp Gln Thr Thr Gln		
195	200	205
Ala Ala Asp Pro Ser Ser Gln Pro His His Thr Gln Lys Ser Thr Thr		
210	215	220
Thr Thr Tyr Asn Thr Asp Thr Ser Ser Pro Ser Ser		
225	230	235

<210> 147

<211> 236

<212> PRT

<213> Human metapneumo virus

<220>

<221> VARIANT

<222> 220, 227

<223> Xaa = unknown amino acid or other

<400> 147

Met Glu Val Arg Val Glu Asn Ile Arg Thr Ile Asp Met Phe Lys Ala		
1	5	10
Lys Met Lys Asn Arg Ile Arg Ser Ser Lys Cys Tyr Arg Asn Ala Thr		
20	25	30
Leu Ile Leu Ile Gly Leu Thr Ala Leu Ser Met Ala Leu Asn Ile Phe		
35	40	45
Leu Ile Ile Asp Tyr Ala Thr Phe Lys Asn Met Thr Lys Val Glu His		
50	55	60
Cys Ala Asn Met Pro Pro Val Glu Pro Ser Lys Lys Thr Pro Met Thr		
65	70	75
Ser Thr Val Asp Ser Ser Thr Gly Pro Asn Pro Gln Gln Thr Thr Gln		
85	90	95
Trp Thr Thr Glu Asp Ser Thr Ser Leu Ala Ala Thr Ser Glu Asp His		
100	105	110
Leu His Thr Gly Thr Thr Pro Thr Leu Asp Ala Thr Val Ser Gln Gln		
115	120	125
Thr Pro Asp Lys His Thr Thr Pro Leu Arg Ser Thr Asn Gly Gln Thr		
130	135	140
Thr Gln Thr Thr Thr Glu Lys Lys Pro Thr Arg Ala Ile Ala Lys Lys		
145	150	155
Glu Thr Thr Asn Gln Thr Ser Thr Ala Ala Thr Gln Thr Phe Asn		

	165	170	175												
Thr	Thr	Asn	Gln	Thr	Arg	Asn	Gly	Arg	Glu	Thr	Thr	Ile	Thr	Ser	Ala
	180				185				190						
Arg	Ser	Arg	Asn	Asp	Ala	Thr	Thr	Gln	Ser	Ser	Glu	Gln	Thr	Asn	Gln
	195				200					205					
Thr	Thr	Asp	Pro	Ser	Ser	Gln	Pro	His	His	Ala	Xaa	Ile	Ser	Thr	Ile
	210				215					220					
Thr	Ile	Xaa	Thr	Gln	His	Arg	His	Ile	Phe	Ser	Lys				
	225				230					235					

<210> 148
 <211> 236
 <212> PRT
 <213> Human metapneumo virus

<220>
 <221> VARIANT
 <222> 208
 <223> Xaa = unknown amino acid or other

<400> 148

Met	Glu	Val	Arg	Val	Glu	Asn	Ile	Arg	Ala	Ile	Asp	Met	Phe	Lys	Ala
1									10						15
Lys	Met	Lys	Asn	Arg	Ile	Arg	Ser	Ser	Lys	Cys	Tyr	Arg	Asn	Ala	Thr
															20
Leu	Ile	Leu	Ile	Gly	Leu	Thr	Ala	Leu	Ser	Met	Ala	Leu	Asn	Ile	Phe
															35
Leu	Ile	Ile	Asp	Tyr	Ala	Met	Leu	Lys	Asn	Met	Thr	Lys	Val	Glu	His
															50
Cys	Val	Asn	Met	Pro	Pro	Val	Glu	Pro	Ser	Lys	Lys	Thr	Pro	Met	Thr
															65
Ser	Ala	Val	Asp	Leu	Asn	Thr	Lys	Leu	Asn	Pro	Gln	Gln	Ala	Thr	Gln
															85
Leu	Thr	Thr	Glu	Asp	Ser	Thr	Ser	Leu	Ala	Ala	Thr	Ser	Glu	Asp	His
															100
Leu	Leu	Thr	Gly	Thr	Pro	Thr	Pro	Asp	Ala	Thr	Val	Ser	Gln	Gln	
															115
Thr	Thr	Asp	Glu	His	Thr	Thr	Leu	Leu	Arg	Ser	Thr	Asn	Arg	Gln	Thr
															130
Thr	Gln	Thr	Thr	Thr	Glu	Lys	Lys	Pro	Thr	Gly	Ala	Thr	Thr	Lys	Lys
															145
Glu	Thr	Thr	Arg	Thr	Thr	Ser	Thr	Ala	Ala	Thr	Gln	Thr	Leu	Asn	
															165
Thr	Thr	Asn	Gln	Thr	Ser	Asn	Gly	Arg	Glu	Ala	Thr	Thr	Ser	Thr	
															180
Arg	Ser	Arg	Asn	Gly	Ala	Thr	Thr	Gln	Asn	Ser	Asp	Gln	Thr	Thr	Xaa
															195
Thr	Ala	Asp	Pro	Ser	Ser	Gln	Pro	His	His	Thr	Gln	Lys	Ser	Thr	Thr
															210
Thr	Thr	Tyr	Asn	Thr	Asp	Thr	Ser	Ser	Pro	Ser	Ser				
															225
															230
															235

<210> 149
 <211> 236
 <212> PRT
 <213> human metapneumo virus

<400> 149

Met	Glu	Val	Arg	Val	Glu	Asn	Ile	Arg	Ala	Ile	Asp	Met	Phe	Lys	Ala
1									10						15

Lys Met Lys Asn Arg Ile Arg Ser Ser Lys Cys Tyr Arg Asn Ala Thr
 20 25 30
 Leu Ile Leu Ile Gly Leu Thr Ala Leu Ser Met Ala Leu Asn Ile Phe
 35 40 45
 Leu Ile Ile Asp Tyr Ala Thr Leu Lys Asn Met Thr Lys Val Glu His
 50 55 60
 Cys Val Asn Met Pro Pro Val Glu Pro Ser Lys Lys Thr Pro Met Thr
 65 70 75 80
 Ser Ala Val Asp Leu Asn Thr Lys Leu Asn Pro Gln Gln Ala Thr Gln
 85 90 95
 Leu Thr Thr Glu Asp Ser Thr Ser Leu Ala Ala Thr Ser Glu Gly His
 100 105 110
 Pro His Thr Gly Thr Thr Pro Thr Pro Asp Ala Thr Val Ser Gln Gln
 115 120 125
 Thr Thr Asp Glu His Thr Thr Leu Leu Arg Ser Thr Asn Arg Gln Thr
 130 135 140
 Thr Gln Thr Ala Thr Glu Lys Lys Pro Thr Gly Ala Thr Thr Lys Lys
 145 150 155 160
 Glu Thr Thr Thr Arg Thr Thr Ser Thr Ala Ala Thr Gln Thr Pro Asn
 165 170 175
 Thr Thr Asn Gln Thr Ser Asn Gly Arg Glu Ala Thr Thr Thr Ser Ala
 180 185 190
 Arg Ser Arg Asn Gly Ala Thr Thr Gln Asn Ser Asp Gln Ile Thr Gln
 195 200 205
 Ala Ala Asp Ser Ser Ser Gln Pro His His Thr Gln Lys Ser Thr Thr
 210 215 220
 Thr Ala Tyr Asn Thr Asp Thr Ser Phe Pro Ser Ser
 225 230 235

<210> 150
 <211> 236
 <212> PRT
 <213> human metapneumo virus

<400> 150

Met Glu Val Arg Val Glu Asn Ile Arg Ala Ile Asp Met Phe Lys Ala
 1 5 10 15
 Lys Met Lys Asn Arg Ile Arg Ser Ser Lys Cys Tyr Arg Asn Ala Thr
 20 25 30
 Leu Ile Leu Ile Gly Leu Thr Ala Leu Ser Met Ala Leu Asn Ile Phe
 35 40 45
 Leu Ile Ile Asp Tyr Ala Thr Leu Lys Asn Met Thr Lys Val Glu His
 50 55 60
 Cys Val Asn Met Pro Pro Val Glu Pro Ser Lys Lys Thr Pro Met Thr
 65 70 75 80
 Ser Ala Val Asp Ser Asn Thr Lys Pro Asn Pro Gln Gln Ala Thr Gln
 85 90 95
 Leu Thr Thr Glu Asp Ser Thr Ser Leu Ala Ala Thr Leu Glu Asp His
 100 105 110
 Pro His Thr Gly Thr Thr Pro Thr Pro Asp Ala Thr Val Ser Gln Gln
 115 120 125
 Thr Thr Asp Glu His Thr Thr Leu Leu Arg Ser Thr Asn Arg Gln Thr
 130 135 140
 Thr Gln Thr Thr Ala Glu Lys Lys Pro Thr Arg Ala Thr Thr Lys Lys
 145 150 155 160
 Glu Thr Thr Thr Arg Thr Thr Ser Thr Ala Ala Thr Gln Thr Leu Asn
 165 170 175
 Thr Thr Asn Gln Thr Ser Asn Gly Arg Glu Ala Thr Thr Thr Ser Ala
 180 185 190
 Arg Ser Arg Asn Asn Ala Thr Thr Gln Ser Ser Asp Gln Thr Thr Gln

195	200	205
Ala Ala Glu Pro Ser Ser Gln Ser Gln His Thr Gln Lys Ser Thr Thr		
210	215	220
Thr Thr Tyr Asn Thr Asp Thr Ser Ser Leu Ser Ser		
225	230	235

<210> 151
 <211> 236
 <212> PRT
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<400> 151		
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Leu Ile Leu Ile Gly Leu Ser Ala Leu Ser Met Ala Leu Asn Ile Phe		
35 40 45		
Leu Ile Ile Asp Tyr Ala Lys Ser Lys Asn Met Thr Arg Val Glu His		
50 55 60		
Cys Val Asn Met Pro Pro Val Glu Pro Ser Lys Lys Thr Pro Met Thr		
65 70 75 80		
Ser Ala Val Asp Leu Asn Thr Lys Pro Asn Pro Gln Arg Ala Thr Gln		
85 90 95		
Leu Thr Thr Glu Asp Ser Thr Ser Leu Ala Ala Thr Leu Glu Gly His		
100 105 110		
Leu His Thr Gly Thr Thr Pro Thr Pro Asp Val Thr Val Ser Gln Gln		
115 120 125		
Thr Thr Asp Glu His Thr Thr Leu Leu Arg Ser Thr Asn Arg Gln Thr		
130 135 140		
Thr Gln Thr Ala Ala Glu Lys Lys Pro Thr Arg Val Thr Thr Asn Lys		
145 150 155 160		
Glu Thr Ile Thr Arg Thr Thr Ser Thr Ala Ala Thr Gln Thr Leu Asn		
165 170 175		
Thr Thr Asn Gln Thr Asn Asn Gly Arg Glu Ala Thr Thr Ser Ala		
180 185 190		
Arg Ser Arg Asn Asn Ala Thr Thr Gln Ser Ser Asp Gln Thr Thr Gln		
195 200 205		
Ala Ala Asp Pro Ser Ser Gln Ser Gln His Thr Gln Lys Ser Ile Thr		
210 215 220		
Thr Thr Tyr Asn Thr Asp Thr Ser Ser Pro Ser Ser		
225 230 235		

<210> 152
 <211> 236
 <212> PRT
 <213> human metapneumo virus

<400> 152		
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35 40 45		
Leu Ile Ile Asp Tyr Ala Lys Ser Lys Thr Met Thr Arg Val Glu His		
50 55 60		
Cys Val Asn Met Pro Pro Val Glu Pro Ser Lys Lys Thr Pro Met Thr		
65 70 75 80		

Ser Ala Val Asp Leu Asn Thr Lys Pro Asn Pro Gln Gln Ala Thr Gln
 85 90 95
 Leu Thr Thr Glu Asp Ser Thr Ser Pro Ala Ala Thr Leu Glu Gly His
 100 105 110
 Leu His Thr Gly Thr Thr Pro Thr Pro Asp Ala Thr Val Ser Gln Gln
 115 120 125
 Thr Thr Asp Glu His Thr Thr Leu Leu Arg Ser Thr Asn Arg Gln Thr
 130 135 140
 Thr Gln Thr Thr Ala Glu Lys Lys Pro Thr Arg Ala Thr Thr Lys Lys
 145 150 155 160
 Glu Thr Ile Thr Arg Thr Ser Thr Ala Ala Thr Gln Thr Leu Asn
 165 170 175
 Thr Thr Asn Gln Thr Ser Asn Gly Arg Glu Ala Thr Thr Ser Ala
 180 185 190
 Arg Ser Arg Asn Asn Ala Thr Thr Gln Ser Ser Asp Gln Thr Thr Gln
 195 200 205
 Ala Ala Asp Pro Ser Ser Gln Ser Gln His Thr Lys Lys Ser Thr Thr
 210 215 220
 Thr Thr Tyr Asn Thr Asp Thr Ser Ser Pro Ser Ser
 225 230 235

<210> 153
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 <212> PRT
 <213> human metapneumo virus

<400> 153
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 35 40 45
 Leu Ile Ile Asp Tyr Ala Thr Leu Lys Asn Met Thr Lys Val Glu His
 50 55 60
 Cys Val Asn Met Pro Pro Val Glu Pro Ser Lys Lys Thr Pro Met Thr
 65 70 75 80
 Ser Ala Val Asp Leu Asn Thr Lys Pro Asn Pro Gln Gln Ala Thr Gln
 85 90 95
 Leu Thr Thr Glu Asp Ser Thr Ser Leu Ala Ala Thr Leu Glu Asp His
 100 105 110
 Pro His Thr Gly Thr Thr Pro Thr Pro Asp Ala Thr Val Ser Gln Gln
 115 120 125
 Thr Thr Asp Glu His Thr Thr Leu Leu Arg Ser Thr Asn Arg Gln Thr
 130 135 140
 Thr Gln Thr Thr Ala Glu Lys Lys Pro Thr Arg Ala Thr Thr Lys Lys
 145 150 155 160
 Glu Thr Thr Arg Thr Thr Ser Thr Ala Ala Thr Gln Thr Leu Asn
 165 170 175
 Thr Thr Asn Gln Thr Ser Asn Gly Arg Glu Ala Thr Thr Ser Ala
 180 185 190
 Arg Ser Arg Asn Asn Ala Thr Thr Gln Ser Ser Asp Gln Thr Thr Gln
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 Ala Ala Glu Pro Asn Ser Gln Ser Gln His Thr Gln Lys Ser Thr Thr
 210 215 220
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 225 230 235

<210> 154

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<211> 449
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<213> human metapneumo virus

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ccatgcaaag ttagcacagg aagacatcct atcagtatgg ttgcactatc tcctcttggg 360
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atcaagcaac tgaacaaagg ctgctctta 449

<210> 155
<211> 449
<212> DNA
<213> human metapneumo virus

<400> 155
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ccatgcaaag ttagcacagg aagacatcct atcagtatgg ttgcactatc tcctcttggg 360
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<210> 156
<211> 449
<212> DNA
<213> human metapneumo virus

<400> 156
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gcttcctct taagagaaga tcaaggatgg tattgtcaga atgcagggtc aactgtttac 180
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ccatgcaaag ttagcacagg aagacatcct atcagtatgg ttgcactatc tcctcttggg 360
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<210> 157
<211> 449
<212> DNA
<213> human metapneumo virus

<400> 157
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<210> 158
<211> 449

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<212> DNA

<213> human metapneumo virus

<400> 158

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<210> 159

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 159

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<210> 160

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 160

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<210> 161

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 161

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<210> 162

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 162

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<210> 163

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 163

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<210> 164

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<212> DNA

<213> human metapneumo virus

<400> 164

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<210> 165

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<212> DNA

<213> human metapneumo virus

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<210> 166

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<400> 174

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<400> 175

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<211> 449

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<213> human metapneumo virus

<400> 177

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<400> 178

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<400> 180
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<210> 187

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<400> 187

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<400> 188

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<211> 449

<212> DNA

<213> human metapneumo virus

<400> 204

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<212> DNA

<213> human metapneumo virus

<400> 205

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<211> 449
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<400> 209
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<211> 449
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<400> 210
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gcttcctcc taagagagga tcaagggtgg tattgtaaaa atgcaggatc cactgtttac 180
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ccatgcaaag tcagcacagg aagacacccct ataagcatgg ttgcactatc acctctcggt 360
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atcaaacaat tacctaaagg ctgctcataa 449

<210> 212
<211> 449
<212> DNA
<213> human metapneumo virus

<400> 212
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<210> 213
<211> 449
<212> DNA
<213> human metapneumo virus

<400> 213
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gcttcctcc taagagagga tcaagggtgg tattgtaaaa atgcaggatc cactgtttac 180
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gcttggtgg cttgctataa agggtaagc tgctcgattg gcagcaatcg ggttggaaatc 420
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<210> 214
<211> 449
<212> DNA
<213> human metapneumo virus

<400> 214
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gcttcctcc taagagagga tcaagggtgg tattgtaaaa atgcaggatc cactgtttac 180
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gcttggtgg cttgctataa agggtaagc tgctcgattg gcagcaatcg ggttggaaatc 420
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<210> 215

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<211> 449
<212> DNA
<213> human metapneumo virus

<400> 215
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ccatgcaaag tcagcacagg aagacacccct ataagcatgg ttgcactatc acctctcggt 360
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atcaaacaat tacccaaagg ctgctcata 449

<210> 216
<211> 449
<212> DNA
<213> human metapneumo virus

<400> 216
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gcttgggtgg cttgtataa agggtaagc tgctcgattt gcagcaatcg ggttggaaatc 420
atcaaacaat tacctaaagg ctgctcata 449

<210> 217
<211> 449
<212> DNA
<213> human metapneumo virus

<400> 217
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atcaaacaac tacctaaagg ctgctcata 449

<210> 218
<211> 449
<212> DNA
<213> human metapneumo virus

<400> 218
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gcttcctcc taagagagga tcaagggtgg tattgtaaaa atgcaggatc cactgtttac 180
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gcttggtag cttgtacaa ggggttagc tgctcgattt gcagtaatcg ggttggaaata 420
atcaaacaac tacctaaagg ctgctcata 449

<210> 219
<211> 449

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<212> DNA
<213> human metapneumo virus

<400> 219
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gcttggtag cttgctacaa aggggttagc tgctcgattg gcagtaatcg ggttggata 420
atcaaacaac tacctaaagg ctgctcata 449

<210> 220
<211> 449
<212> DNA
<213> human metapneumo virus

<400> 220
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atcaaacaac tacctaaagg ctgctcata 449

<210> 221
<211> 449
<212> DNA
<213> human metapneumo virus

<400> 221
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atcaaacaac tacctaaagg ctgctcata 449

<210> 222
<211> 449
<212> DNA
<213> human metapneumo virus

<400> 222
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atcaaacaac tacctaaagg ctgctcata 449

<210> 223
<211> 449
<212> DNA

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<213> human metapneumo virus

<400> 223

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<210> 224

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 224

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gcttggttag cttgctacaa aggggttagc tggatcttgc gcaatcg ggttggata 420
atcaaacaac tacctaaagg ctgctcata 449

<210> 225

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 225

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<210> 226

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 226

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<210> 227

<211> 449

<212> DNA

<213> human metapneumo virus

<400> 227
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<210> 228
 <211> 449
 <212> DNA
 <213> human metapneumo virus

<400> 228
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<210> 229
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<210> 230
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<400> 230
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 ccatgcaaag tcagcacagg aagacacccct atcagcatgg ttgcactatc acctctcggt 360
 gcttggtag cttgctacaa aggggttagc tggtcaatttgc gcatgaaatcg ggttggata 420
 atcaaacaac tacctaaagg ctgctcata 449

<210> 231
 <211> 449
 <212> DNA
 <213> human metapneumo virus

<400> 231
atagggtct acggaagctc tgtgattac atggccagc tgccgatctt tgggtcata 60
gatacacctt gttgataat caaggcagct ccctcttgg tggaaaattat 120
gcttcctcc taagagagga tcaagggtgg tattgtaaa atgcaggatc cactgtttac 180
tacccaaatg aaaaagactg cgaaacaaga ggtgatcatg tttttgtga cacagcagca 240
gggatcaacg ttgctgagca atcaagagaa tgcaacatca acatatctac caccaactat 300
ccgtgcaaaag tcagcacagg aagacacccct atcagcatgg ttgcactatc acctctcggt 360
gcttggtag cttgctacaa aggggttagc tgctcgattt gcagtaatcg ggttggata 420
atcaaacaac tacctaaagg ctgctcata 449

<210> 232
<211> 449
<212> DNA
<213> human metapneumo virus

<400> 232
atagggtct acggaagctc cgtgattac atggccagc tgccgatctt tgggtcata 60
gatacacctt gttgataat caaggcagct ccctcttgg tggaaaattat 120
gcttcctcc taagagagga tcaagggtgg tattgtaaa atgcaggatc cactgtttac 180
tacccaaatg aaaaagactg cgaaacaaga ggtgatcatg tttttgtga cacagctgca 240
gggatcaatg ttgctgagca atcaagagaa tgcaacatca acatatctac aaccaactac 300
ccatgcaaaag tcagcacagg aagacacccct atcagcatgg ttgcactatc acctctcggt 360
gcttggtag cttgctacaa aggggttagc tttcaattt gcagtaatcg ggttggata 420
atcaaacaac tacctaaagg ctgctcata 449

<210> 233
<211> 449
<212> DNA
<213> human metapneumo virus

<400> 233
atagggtct acggaagctc cgtgattac atggccagc tgccgatctt tgggtcata 60
gatacacctt gttgataat caaggcagct ccctcttgg tggaaaattat 120
gcttcctcc taagagagga tcaagggtgg tattgtaaa atgcaggatc cactgtttac 180
tacccaaatg aaaaagactg cgaaacaaga ggtgatcatg tttttgtga cacagcagca 240
gggatcaatg ttgctgagca atcaagagaa tgcaacatca acatatctac aaccaactac 300
ccatgcaaaag tcagcacagg aagacacccct atcagcatgg ttgcactatc acctctcggt 360
gcttggtag cttgctacaa aggggttagc tttcaattt gcagtaatcg ggttggata 420
atcaaacaac tacctaaagg ctgctcata 449

<210> 234
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 234
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
20 25 30
Cys Ser Gly Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly

115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Asn Lys Gly Cys Ser
145

<210> 235
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 235
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Asn Lys Gly Cys Ser
145

<210> 236
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 236
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Asn Lys Gly Cys Ser
145

<210> 237
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 237
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Asn Lys Gly Cys Ser
145

<210> 238
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 238
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Asn Lys Gly Cys Ser
145

<210> 239
<211> 149
<212> PRT

<213> human metapneumo virus

<400> 239
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Asn Lys Gly Cys Ser
145

<210> 240

<211> 149

<212> PRT

<213> human metapneumo virus

<400> 240
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Asn Lys Gly Cys Ser
145

<210> 241

<211> 149

<212> PRT

<213> human metapneumo virus

<400> 241

Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15

Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Asn Lys Gly Cys Ser
 145

<210> 242
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 242
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Asn Lys Gly Cys Ser
 145

<210> 243
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 243
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu

50	55	60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala		
65	70	75
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser		80
85	90	95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser		
100	105	110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly		
115	120	125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu		
130	135	140
Asn Lys Gly Cys Ser		
145		

<210> 244
 <211> 149
 <212> PRT
 <213> human metapneumo virus

400	244															
Ile	Gly	Val	Tyr	Gly	Ser	Ser	Val	Ile	Tyr	Met	Val	Gln	Leu	Pro	Ile	
1		5						10		10		15				
Phe	Gly	Val	Ile	Asp	Thr	Pro	Cys	Trp	Ile	Val	Lys	Ala	Ala	Pro	Ser	
20								25				30				
Cys	Ser	Glu	Lys	Lys	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg	Glu	Asp	Gln	
35								40				45				
Gly	Trp	Tyr	Cys	Gln	Asn	Ala	Gly	Ser	Thr	Val	Tyr	Tyr	Pro	Asn	Glu	
50								55			60					
Lys	Asp	Cys	Glu	Thr	Arg	Gly	Asp	His	Val	Phe	Cys	Asp	Thr	Ala	Ala	
65								70			75			80		
Gly	Ile	Asn	Val	Ala	Glu	Gln	Ser	Lys	Glu	Cys	Asn	Ile	Asn	Ile	Ser	
85								90				95				
Thr	Thr	Asn	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His	Pro	Ile	Ser	
100								105				110				
Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys	Tyr	Lys	Gly	
115								120				125				
Val	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Arg	Val	Gly	Ile	Ile	Lys	Gln	Leu	
130								135				140				
Asn	Lys	Gly	Cys	Ser												
145																

<210> 245
 <211> 149
 <212> PRT
 <213> human metapneumo virus

400	245															
Ile	Gly	Val	Tyr	Gly	Ser	Ser	Val	Ile	Tyr	Met	Val	Gln	Leu	Pro	Ile	
1		5						10		10		15				
Phe	Gly	Val	Ile	Asp	Thr	Pro	Cys	Trp	Ile	Val	Lys	Ala	Ala	Pro	Ser	
20								25				30				
Cys	Ser	Glu	Lys	Lys	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg	Glu	Asp	Gln	
35								40				45				
Gly	Trp	Tyr	Cys	Gln	Asn	Ala	Gly	Ser	Thr	Val	Tyr	Tyr	Pro	Asn	Glu	
50								55			60					
Lys	Asp	Cys	Glu	Thr	Arg	Gly	Asp	His	Val	Phe	Cys	Asp	Thr	Ala	Ala	
65								70			75			80		
Gly	Ile	Asn	Val	Ala	Glu	Gln	Ser	Lys	Glu	Cys	Asn	Ile	Asn	Ile	Ser	
85								90				95				

Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Asn Lys Gly Cys Ser
145

<210> 246
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 246
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Asn Lys Gly Cys Ser
145

<210> 247
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 247
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Arg Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu

130
Asn Lys Gly Cys Ser
145

135

140

<210> 248
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 248
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Asn Lys Gly Cys Ser
145

<210> 249
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 249
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Asn Lys Gly Cys Ser
145

<210> 250
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 250
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Asn Lys Gly Cys Ser
145

<210> 251
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 251
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Asn Lys Gly Cys Ser
145

<210> 252
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 252
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Asn Lys Gly Cys Ser
145

<210> 253
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 253
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Asn Lys Gly Cys Ser
145

<210> 254
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 254
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
20 25 30

Cys Ser Gly Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Asn Lys Gly Cys Ser
 145

<210> 255
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 255
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Gly Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Asn Lys Gly Cys Ser
 145

<210> 256
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 256
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala

65	70	75	80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser			
85	90	95	
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser			
100	105	110	
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly			
115	120	125	
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu			
130	135	140	
Asn Lys Gly Cys Ser			
145			

<210> 257
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 257			
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile			
1	5	10	15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser			
20	25	30	
Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln			
35	40	45	
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu			
50	55	60	
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala			
65	70	75	80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser			
85	90	95	
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser			
100	105	110	
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly			
115	120	125	
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu			
130	135	140	
Asn Lys Gly Cys Ser			
145			

<210> 258
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 258			
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile			
1	5	10	15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser			
20	25	30	
Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln			
35	40	45	
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu			
50	55	60	
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala			
65	70	75	80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser			
85	90	95	
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser			
100	105	110	

Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Asn Lys Gly Cys Ser
145

<210> 259
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 259
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Asn Lys Gly Cys Ser
145

<210> 260
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 260
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Asn Lys Gly Cys Ser

<210> 261
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 261
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Asn Lys Gly Cys Ser
 145

<210> 262
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 262
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Asn Lys Gly Cys Ser
 145

<210> 263
 <211> 149

<212> PRT

<213> human metapneumo virus

<400> 263

Ile	Gly	Val	Tyr	Gly	Ser	Ser	Val	Ile	Tyr	Met	Val	Gln	Leu	Pro	Ile
1					5					10					15
Phe	Gly	Val	Ile	Asp	Thr	Pro	Cys	Trp	Ile	Val	Lys	Ala	Ala	Pro	Ser
					20					25					30
Cys	Ser	Glu	Lys	Lys	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg	Glu	Asp	Gln
					35					40					45
Gly	Trp	Tyr	Cys	Gln	Asn	Ala	Gly	Ser	Thr	Val	Tyr	Tyr	Pro	Asn	Glu
					50					55					60
Lys	Asp	Cys	Glu	Thr	Arg	Gly	Asp	His	Val	Phe	Cys	Asp	Thr	Ala	Ala
					65					70					80
Gly	Ile	Asn	Val	Ala	Glu	Gln	Ser	Lys	Glu	Cys	Asn	Ile	Asn	Ile	Ser
					85					90					95
Thr	Thr	Asn	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His	Pro	Ile	Ser
					100					105					110
Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys	Tyr	Lys	Gly
					115					120					125
Val	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Arg	Val	Gly	Ile	Ile	Lys	Gln	Leu
					130					135					140
Asn	Lys	Gly	Cys	Ser											
					145										

<210> 264

<211> 149

<212> PRT

<213> human metapneumo virus

<400> 264

Ile	Gly	Val	Tyr	Gly	Ser	Ser	Val	Ile	Tyr	Met	Val	Gln	Leu	Pro	Ile
1					5					10					15
Phe	Gly	Val	Ile	Asp	Thr	Pro	Cys	Trp	Ile	Val	Lys	Ala	Ala	Pro	Ser
					20					25					30
Cys	Ser	Glu	Lys	Lys	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg	Glu	Asp	Gln
					35					40					45
Gly	Trp	Tyr	Cys	Gln	Asn	Ala	Gly	Ser	Thr	Val	Tyr	Tyr	Pro	Asn	Glu
					50					55					60
Lys	Asp	Cys	Glu	Thr	Arg	Gly	Asp	His	Val	Phe	Cys	Asp	Thr	Ala	Ala
					65					70					80
Gly	Ile	Asn	Val	Ala	Glu	Gln	Ser	Lys	Glu	Cys	Asn	Ile	Asn	Ile	Ser
					85					90					95
Thr	Thr	Asn	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His	Pro	Ile	Ser
					100					105					110
Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys	Tyr	Lys	Gly
					115					120					125
Val	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Arg	Val	Gly	Ile	Ile	Lys	Gln	Leu
					130					135					140
Asn	Lys	Gly	Cys	Ser											
					145										

<210> 265

<211> 149

<212> PRT

<213> human metapneumo virus

<400> 265

Ile

Gly

Val

Tyr

Gly

Ser

Ser

Val

Ile

Tyr

Met

Val

Gln

Leu

Pro

Ile

1	5	10	15												
Phe	Gly	Val	Ile	Asp	Thr	Pro	Cys	Trp	Ile	Val	Lys	Ala	Ala	Pro	Ser
20	25	30													
Cys	Ser	Glu	Lys	Lys	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg	Glu	Asp	Gln
35	40	45													
Gly	Trp	Tyr	Cys	Gln	Asn	Ala	Gly	Ser	Thr	Val	Tyr	Tyr	Pro	Asn	Glu
50	55	60													
Lys	Asp	Cys	Glu	Thr	Arg	Gly	Asp	His	Val	Phe	Cys	Asp	Thr	Val	Ala
65	70	75	80												
Gly	Ile	Asn	Val	Ala	Glu	Gln	Ser	Lys	Glu	Cys	Asn	Ile	Asn	Ile	Ser
85	90	95													
Thr	Thr	Asn	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His	Pro	Ile	Ser
100	105	110													
Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys	Tyr	Lys	Gly
115	120	125													
Val	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Arg	Val	Gly	Ile	Ile	Lys	Gln	Leu
130	135	140													
Asn	Lys	Gly	Cys	Ser											
145															

<210> 266
 <211> 149
 <212> PRT
 <213> human metapneumo virus

1	5	10	15												
Ile	Gly	Val	Tyr	Gly	Ser	Ser	Val	Ile	Tyr	Met	Val	Gln	Leu	Pro	Ile
20	25	30													
Cys	Ser	Glu	Lys	Lys	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg	Glu	Asp	Gln
35	40	45													
Gly	Trp	Tyr	Cys	Gln	Asn	Ala	Gly	Ser	Thr	Val	Tyr	Tyr	Pro	Asn	Glu
50	55	60													
Lys	Asp	Cys	Glu	Thr	Arg	Gly	Asp	His	Val	Phe	Cys	Asp	Thr	Ala	Ala
65	70	75	80												
Gly	Ile	Asn	Val	Ala	Glu	Gln	Ser	Lys	Glu	Cys	Asn	Ile	Asn	Ile	Ser
85	90	95													
Thr	Thr	Asn	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His	Pro	Ile	Ser
100	105	110													
Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys	Tyr	Lys	Gly
115	120	125													
Val	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Arg	Val	Gly	Ile	Ile	Lys	Gln	Leu
130	135	140													
Asn	Lys	Gly	Cys	Ser											
145															

<210> 267
 <211> 149
 <212> PRT
 <213> human metapneumo virus

1	5	10	15												
Ile	Gly	Val	Tyr	Gly	Ser	Ser	Val	Ile	Tyr	Met	Val	Gln	Leu	Pro	Ile
20	25	30													
Cys	Ser	Glu	Lys	Lys	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg	Glu	Asp	Gln
35	40	45													

Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Asn Lys Gly Cys Ser
 145

<210> 268
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 268
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Asn Lys Gly Cys Ser
 145

<210> 269
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 269
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser

85	90	95
Thr Thr Asn Tyr Pro Cys Lys Val Ser	Thr Gly Arg His Pro Ile Ser	
100	105	110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly		
115	120	125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu		
130	135	140
Asn Lys Gly Cys Ser		
145		

<210> 270
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 270
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Asn Lys Gly Cys Ser
 145

<210> 271
<211> 149
<212> PRT
<213> human metapneumo virus

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<400> 271
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
  1           5           10          15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
  20          25          30
Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
  35          40          45
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
  50          55          60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
  65          70          75          80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
  85          90          95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100         105         110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115         120         125

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Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Asn Lys Gly Cys Ser
145

<210> 272
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 272
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Asn Lys Gly Cys Ser
145

<210> 273
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 273
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Asn Lys Gly Cys Ser
145

<210> 274
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 274
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Asn Lys Gly Cys Ser
145

<210> 275
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 275
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Asn Lys Gly Cys Ser
145

<210> 276
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 276
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Asn Lys Gly Cys Ser
145

<210> 277
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 277
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Asn Lys Gly Cys Ser
145

<210> 278
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 278
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser

20	25	30
Cys Ser Glu Lys Asn Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln		
35	40	45
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu		
50	55	60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala		
65	70	75
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser		
85	90	95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser		
100	105	110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly		
115	120	125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu		
130	135	140
Pro Lys Gly Cys Ser		
145		

<210> 279
 <211> 149
 <212> PRT
 <213> human metapneumo virus

1	5	10	15
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile			
20	25	30	
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser			
35	40	45	
Cys Ser Glu Lys Asn Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln			
50	55	60	
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu			
65	70	75	80
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala			
85	90	95	
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser			
100	105	110	
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser			
115	120	125	
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly			
130	135	140	
Val Ser Cys Ser Ile Gly Ser Asn Trp Val Gly Ile Ile Lys Gln Leu			
Pro Lys Gly Cys Ser			
145			

<210> 280
 <211> 149
 <212> PRT
 <213> human metapneumo virus

1	5	10	15
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile			
20	25	30	
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser			
35	40	45	
Cys Ser Glu Lys Asn Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln			
50	55	60	
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu			

Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Pro Lys Gly Cys Ser
145

<210> 281
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 281
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Asn Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Pro Lys Gly Cys Ser
145

<210> 282
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 282
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Asn Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser

	100	105	110												
Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys	Tyr	Lys	Gly
	115					120						125			
Val	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Arg	Val	Gly	Ile	Ile	Lys	Gln	Leu
	130					135						140			
Pro	Lys	Gly	Cys	Ser											
	145														

<210> 283
 <211> 149
 <212> PRT
 <213> human metapneumo virus

	100	105	110												
Ile	Gly	Val	Tyr	Gly	Ser	Ser	Val	Ile	Tyr	Met	Val	Gln	Leu	Pro	Ile
1		5						10		10			15		
Phe	Gly	Val	Ile	Asp	Thr	Pro	Cys	Trp	Ile	Ile	Lys	Ala	Ala	Pro	Ser
	20							25					30		
Cys	Ser	Glu	Lys	Asn	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg	Glu	Asp	Gln
	35						40					45			
Gly	Trp	Tyr	Cys	Lys	Asn	Ala	Gly	Ser	Thr	Val	Tyr	Tyr	Pro	Asn	Glu
	50						55					60			
Lys	Asp	Cys	Glu	Thr	Arg	Gly	Asp	His	Val	Phe	Cys	Asp	Thr	Ala	Ala
65							70				75			80	
Gly	Ile	Asn	Val	Ala	Glu	Gln	Ser	Arg	Glu	Cys	Asn	Ile	Asn	Ile	Ser
	85						90				95				
Thr	Thr	Asn	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His	Pro	Ile	Ser
	100						105					110			
Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys	Tyr	Lys	Gly
	115						120					125			
Val	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Arg	Val	Gly	Ile	Ile	Lys	Gln	Leu
	130						135					140			
Pro	Lys	Gly	Cys	Ser											
	145														

<210> 284
 <211> 149
 <212> PRT
 <213> human metapneumo virus

	100	105	110												
Ile	Gly	Val	Tyr	Gly	Ser	Ser	Val	Ile	Tyr	Met	Val	Gln	Leu	Pro	Ile
1		5						10		10			15		
Phe	Gly	Val	Ile	Asp	Thr	Pro	Cys	Trp	Ile	Ile	Lys	Ala	Ala	Pro	Ser
	20							25					30		
Cys	Ser	Glu	Lys	Asn	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg	Glu	Asp	Gln
	35						40					45			
Gly	Trp	Tyr	Cys	Lys	Asn	Ala	Gly	Ser	Thr	Val	Tyr	Tyr	Pro	Asn	Glu
	50						55					60			
Lys	Asp	Cys	Glu	Thr	Arg	Gly	Asp	His	Val	Phe	Cys	Asp	Thr	Ala	Ala
65							70				75			80	
Gly	Ile	Asn	Val	Ala	Glu	Gln	Ser	Arg	Glu	Cys	Asn	Ile	Asn	Ile	Ser
	85						90				95				
Thr	Thr	Asn	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His	Pro	Ile	Ser
	100						105					110			
Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys	Tyr	Lys	Gly
	115						120					125			
Val	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Arg	Val	Gly	Ile	Ile	Lys	Gln	Leu
	130						135					140			
Pro	Lys	Gly	Cys	Ser											

Pro Lys Gly Cys Ser
145

<210> 285
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 285
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Asn Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Ser Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Pro Lys Gly Cys Ser
145

<210> 286
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 286
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Asn Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Pro Lys Gly Cys Ser
145

<210> 287

<211> 149
<212> PRT
<213> human metapneumo virus

<400> 287
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Asn Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Pro Lys Gly Cys Ser
145

<210> 288
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 288
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Asn Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Pro Lys Gly Cys Ser
145

<210> 289
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 289

Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Asn Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Pro Lys Gly Cys Ser
 145

<210> 290

<211> 149

<212> PRT

<213> human metapneumo virus

<400> 290

Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Asn Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Pro Lys Gly Cys Ser
 145

<210> 291

<211> 149

<212> PRT

<213> human metapneumo virus

<400> 291

Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Asn Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln

35	40	45
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu		
50	55	60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala		
65	70	75
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser		
85	90	95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser		
100	105	110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly		
115	120	125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu		
130	135	140
Pro Lys Gly Cys Ser		
145		

<210> 292
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 292		
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile		
1	5	10
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser		
20	25	30
Cys Ser Glu Lys Asn Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln		
35	40	45
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu		
50	55	60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala		
65	70	75
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser		
85	90	95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser		
100	105	110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly		
115	120	125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu		
130	135	140
Pro Lys Gly Cys Ser		
145		

<210> 293
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 293		
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile		
1	5	10
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser		
20	25	30
Cys Ser Glu Lys Asn Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln		
35	40	45
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu		
50	55	60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala		
65	70	75
80		

Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Pro Lys Gly Cys Ser
145

<210> 294
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 294
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Asn Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Pro Lys Gly Cys Ser
145

<210> 295
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 295
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Asn Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly

115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Pro Lys Gly Cys Ser
145

<210> 296
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 296
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Asn Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Pro Lys Gly Cys Ser
145

<210> 297
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 297
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Pro Lys Gly Cys Ser
145

<210> 298
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 298
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Pro Lys Gly Cys Ser
145

<210> 299
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 299
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Pro Lys Gly Cys Ser
145

<210> 300
<211> 149
<212> PRT

<213> human metapneumo virus

<400> 300
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Pro Lys Gly Cys Ser
145

<210> 301
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 301
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Pro Lys Gly Cys Ser
145

<210> 302
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 302
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15

Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Pro Lys Gly Cys Ser
 145

<210> 303
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 303
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Pro Lys Gly Cys Ser
 145

<210> 304
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 304
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu

50	55	60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala		
65	70	75
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser		80
85	90	95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser		
100	105	110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly		
115	120	125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu		
130	135	140
Pro Lys Gly Cys Ser		
145		

<210> 305
<211> 149
<212> PRT
<213> human metapneumo virus

1	5	10	15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser			
20	25	30	
Cys Ser Glu Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln			
35	40	45	
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu			
50	55	60	
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala			
65	70	75	80
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser			
85	90	95	
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser			
100	105	110	
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly			
115	120	125	
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu			
130	135	140	
Pro Lys Gly Cys Ser			
145			

<210> 306
<211> 149
<212> PRT
<213> human metapneumo virus

1	5	10	15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser			
20	25	30	
Cys Ser Glu Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln			
35	40	45	
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu			
50	55	60	
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala			
65	70	75	80
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser			
85	90	95	

Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Pro Lys Gly Cys Ser
 145

<210> 307
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 307
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
 130 135 140
 Pro Lys Gly Cys Ser
 145

<210> 308
 <211> 149
 <212> PRT
 <213> human metapneumo virus

<400> 308
 Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
 1 5 10 15
 Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
 20 25 30
 Cys Ser Glu Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
 35 40 45
 Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
 50 55 60
 Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
 65 70 75 80
 Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
 85 90 95
 Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
 100 105 110
 Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
 115 120 125
 Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu

130	135	140	
Pro Lys Gly Cys Ser			
145			
<210> 309			
<211> 149			
<212> PRT			
<213> human metapneumo virus			
<400> 309			
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile			
1	5	10	15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser			
20	25	30	
Cys Ser Glu Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln			
35	40	45	
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu			
50	55	60	
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala			
65	70	75	80
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser			
85	90	95	
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser			
100	105	110	
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly			
115	120	125	
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu			
130	135	140	
Pro Lys Gly Cys Ser			
145			
<210> 310			
<211> 149			
<212> PRT			
<213> human metapneumo virus			
<400> 310			
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile			
1	5	10	15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser			
20	25	30	
Cys Ser Glu Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln			
35	40	45	
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu			
50	55	60	
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala			
65	70	75	80
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser			
85	90	95	
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser			
100	105	110	
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly			
115	120	125	
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu			
130	135	140	
Pro Lys Gly Cys Ser			
145			

<210> 311
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 311
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Pro Lys Gly Cys Ser
145

<210> 312
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 312
Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln Leu Pro Ile
1 5 10 15
Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala Ala Pro Ser
20 25 30
Cys Ser Glu Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg Glu Asp Gln
35 40 45
Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr Pro Asn Glu
50 55 60
Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp Thr Ala Ala
65 70 75 80
Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile Asn Ile Ser
85 90 95
Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His Pro Ile Ser
100 105 110
Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys Tyr Lys Gly
115 120 125
Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile Lys Gln Leu
130 135 140
Pro Lys Gly Cys Ser
145

<210> 313
<211> 149
<212> PRT
<213> human metapneumo virus

<400> 313

Ile	Gly	Val	Tyr	Gly	Ser	Ser	Val	Ile	Tyr	Met	Val	Gln	Leu	Pro	Ile
1				5					10						15
Phe	Gly	Val	Ile	Asp	Thr	Pro	Cys	Trp	Ile	Ile	Lys	Ala	Ala	Pro	Ser
				20				25							30
Cys	Ser	Glu	Lys	Asp	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg	Glu	Asp	Gln
				35				40							45
Gly	Trp	Tyr	Cys	Lys	Asn	Ala	Gly	Ser	Thr	Val	Tyr	Tyr	Pro	Asn	Glu
				50				55							60
Lys	Asp	Cys	Glu	Thr	Arg	Gly	Asp	His	Val	Phe	Cys	Asp	Thr	Ala	Ala
				65				70							80
Gly	Ile	Asn	Val	Ala	Glu	Gln	Ser	Arg	Glu	Cys	Asn	Ile	Asn	Ile	Ser
				85				90							95
Thr	Thr	Asn	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His	Pro	Ile	Ser
				100				105							110
Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys	Tyr	Lys	Gly
				115				120							125
Val	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Arg	Val	Gly	Ile	Ile	Lys	Gln	Leu
				130				135							140
Pro	Lys	Gly	Cys	Ser											
				145											

<210> 314
<211> 539
<212> PRT
<213> human metapneumo virus

<400> 314

Met	Ser	Trp	Lys	Val	Val	Ile	Ile	Phe	Ser	Leu	Leu	Ile	Thr	Pro	Gln
1				5					10						15
His	Gly	Leu	Lys	Glu	Ser	Tyr	Leu	Glu	Glu	Ser	Cys	Ser	Thr	Ile	Thr
				20				25							30
Glu	Gly	Tyr	Leu	Ser	Val	Leu	Arg	Thr	Gly	Trp	Tyr	Tyr	Asn	Val	Phe
				35				40							45
Thr	Leu	Glu	Val	Gly	Asp	Val	Glu	Asn	Leu	Thr	Cys	Ala	Asp	Gly	Pro
				50				55							60
Ser	Leu	Ile	Lys	Thr	Glu	Leu	Asp	Leu	Thr	Lys	Ser	Ala	Leu	Arg	Glu
				65				70							80
Leu	Arg	Thr	Val	Ser	Ala	Asp	Gln	Leu	Ala	Arg	Glu	Glu	Gln	Ile	Glu
				85				90							95
Asn	Pro	Arg	Gln	Ser	Arg	Phe	Val	Leu	Gly	Ala	Ile	Ala	Leu	Gly	Val
				100				105							110
Ala	Thr	Ala	Ala	Ala	Val	Thr	Ala	Gly	Val	Ala	Ile	Ala	Lys	Thr	Ile
				115				120							125
Arg	Leu	Glu	Ser	Glu	Val	Thr	Ala	Ile	Lys	Asn	Ala	Leu	Lys	Lys	Thr
				130				135							140
Asn	Glu	Ala	Val	Ser	Thr	Leu	Gly	Asn	Gly	Val	Arg	Val	Leu	Ala	Thr
				145				150							160
Ala	Val	Arg	Glu	Leu	Lys	Asp	Phe	Val	Ser	Lys	Asn	Leu	Thr	Arg	Ala
				165				170							175
Ile	Asn	Lys	Asn	Lys	Cys	Asp	Ile	Ala	Asp	Leu	Lys	Met	Ala	Val	Ser
				180				185							190
Phe	Ser	Gln	Phe	Asn	Arg	Arg	Phe	Leu	Asn	Val	Val	Arg	Gln	Phe	Ser
				195				200							205
Asp	Asn	Ala	Gly	Ile	Thr	Pro	Ala	Ile	Ser	Leu	Asp	Leu	Met	Thr	Asp
				210				215							220
Ala	Glu	Leu	Ala	Arg	Ala	Val	Ser	Asn	Met	Pro	Thr	Ser	Ala	Gly	Gln
				225				230							240
Ile	Lys	Leu	Met	Leu	Glu	Asn	Arg	Ala	Met	Val	Arg	Arg	Lys	Gly	Phe
				245				250							255

Gly Ile Leu Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln
 260 265 270
 Leu Pro Ile Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala
 275 280 285
 Ala Pro Ser Cys Ser Gly Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg
 290 295 300
 Glu Asp Gln Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr
 305 310 315 320
 Pro Asn Glu Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp
 325 330 335
 Thr Ala Ala Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile
 340 345 350
 Asn Ile Ser Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His
 355 360 365
 Pro Ile Ser Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys
 370 375 380
 Tyr Lys Gly Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile
 385 390 395 400
 Lys Gln Leu Asn Lys Gly Cys Ser Tyr Ile Thr Asn Gln Asp Ala Asp
 405 410 415
 Thr Val Thr Ile Asp Asn Thr Val Tyr Gln Leu Ser Lys Val Glu Gly
 420 425 430
 Glu Gln His Val Ile Lys Gly Arg Pro Val Ser Ser Ser Phe Asp Pro
 435 440 445
 Val Lys Phe Pro Glu Asp Gln Phe Asn Val Ala Leu Asp Gln Val Phe
 450 455 460
 Glu Ser Ile Glu Asn Ser Gln Ala Leu Val Asp Gln Ser Asn Arg Ile
 465 470 475 480
 Leu Ser Ser Ala Glu Lys Gly Asn Thr Gly Phe Ile Ile Val Ile Ile
 485 490 495
 Leu Ile Ala Val Leu Gly Ser Thr Met Ile Leu Val Ser Val Phe Ile
 500 505 510
 Ile Ile Lys Lys Thr Lys Lys Pro Thr Gly Ala Pro Pro Glu Leu Ser
 515 520 525
 Gly Val Thr Asn Asn Gly Phe Ile Pro His Asn
 530 535

<210> 315
 <211> 539
 <212> PRT
 <213> human metapneumo virus

<400> 315
 Met Ser Trp Lys Val Val Ile Ile Phe Ser Leu Leu Ile Thr Pro Gln
 1 5 10 15
 His Gly Leu Lys Glu Ser Tyr Leu Glu Glu Ser Cys Ser Thr Ile Thr
 20 25 30
 Glu Gly Tyr Leu Ser Val Leu Arg Thr Gly Trp Tyr Thr Asn Val Phe
 35 40 45
 Thr Leu Glu Val Gly Asp Val Glu Asn Leu Thr Cys Ser Asp Gly Pro
 50 55 60
 Ser Leu Ile Lys Thr Glu Leu Asp Leu Thr Lys Ser Ala Leu Arg Glu
 65 70 75 80
 Leu Lys Thr Val Ser Ala Asp Gln Leu Ala Arg Glu Glu Gln Ile Glu
 85 90 95
 Asn Pro Arg Gln Ser Arg Phe Val Leu Gly Ala Ile Ala Leu Gly Val
 100 105 110
 Ala Thr Ala Ala Ala Val Thr Ala Gly Val Ala Ile Ala Lys Thr Ile
 115 120 125
 Arg Leu Glu Ser Glu Val Thr Ala Ile Lys Asn Ala Leu Lys Thr Thr

130	135	140
Asn Glu Ala Val Ser Thr	Leu Gly Asn Gly Val Arg Val	Leu Ala Thr
145	150	155
Ala Val Arg Glu Leu Lys Asp Phe Val Ser	Lys Asn Leu Thr Arg Ala	160
165	170	175
Ile Asn Lys Asn Lys Cys Asp Ile Asp Asp	Leu Lys Met Ala Val Ser	
180	185	190
Phe Ser Gln Phe Asn Arg Arg	Phe Leu Asn Val Val Arg Gln Phe Ser	
195	200	205
Asp Asn Ala Gly Ile Thr Pro Ala Ile Ser	Leu Asp Leu Met Thr Asp	
210	215	220
Ala Glu Leu Ala Arg Ala Val Ser Asn Met	Pro Thr Ser Ala Gly Gln	
225	230	235
Ile Lys Leu Met Leu Glu Asn Arg Ala Met	Val Arg Arg Lys Gly Phe	240
245	250	255
Gly Ile Leu Ile Gly Val Tyr Gly Ser Ser	Val Ile Tyr Thr Val Gln	
260	265	270
Leu Pro Ile Phe Gly Val Ile Asp Thr Pro	Cys Trp Ile Val Lys Ala	
275	280	285
Ala Pro Ser Cys Ser Glu Lys Lys Gly Asn	Tyr Ala Cys Leu Leu Arg	
290	295	300
Glu Asp Gln Gly Trp Tyr Cys Gln Asn Ala	Gly Ser Thr Val Tyr Tyr	
305	310	315
Pro Asn Glu Lys Asp Cys Glu Thr Arg Gly	Asp His Val Phe Cys Asp	320
325	330	335
Thr Ala Ala Gly Ile Asn Val Ala Glu Gln	Ser Lys Glu Cys Asn Ile	
340	345	350
Asn Ile Ser Thr Thr Asn Tyr Pro Cys Lys	Val Ser Thr Gly Arg His	
355	360	365
Pro Ile Ser Met Val Ala Leu Ser Pro	Leu Gly Ala Leu Val Ala Cys	
370	375	380
Tyr Lys Gly Val Ser Cys Ser Ile Gly Ser	Asn Arg Val Gly Ile Ile	
385	390	395
Lys Gln Leu Asn Lys Gly Cys Ser Tyr Ile	Thr Asn Gln Asp Ala Asp	400
405	410	415
Thr Val Thr Ile Asp Asn Thr Val Tyr	Gln Leu Ser Lys Val Glu Gly	
420	425	430
Glu Gln His Val Ile Lys Gly Arg Pro	Val Ser Ser Ser Phe Asp Pro	
435	440	445
Ile Lys Phe Pro Glu Asp Gln Phe Asn	Val Ala Leu Asp Gln Val Phe	
450	455	460
Glu Asn Ile Glu Asn Ser Gln Ala Leu	Val Asp Gln Ser Asn Arg Ile	
465	470	475
Leu Ser Ser Ala Glu Lys Gly Asn Thr	Gly Phe Ile Ile Val Ile Ile	480
485	490	495
Leu Ile Ala Val Leu Gly Ser Ser Met	Ile Leu Val Ser Ile Phe Ile	
500	505	510
Ile Ile Lys Lys Thr Lys Pro Thr Gly	Ala Pro Pro Glu Leu Ser	
515	520	525
Gly Val Thr Asn Asn Gly Phe Ile Pro His	Ser	
530	535	

<210> 316
 <211> 539
 <212> PRT
 <213> human metapneumo virus

<400> 316
 Met Ser Trp Lys Val Met Ile Ile Ile Ser Leu Leu Ile Thr Pro Gln
 1 5 10 15

His Gly Leu Lys Glu Ser Tyr Leu Glu Glu Ser Cys Ser Thr Ile Thr
 20 25 30
 Glu Gly Tyr Leu Ser Val Leu Arg Thr Gly Trp Tyr Thr Asn Val Phe
 35 40 45
 Thr Leu Glu Val Gly Asp Val Glu Asn Leu Thr Cys Thr Asp Gly Pro
 50 55 60
 Ser Leu Ile Lys Thr Glu Leu Asp Leu Thr Lys Ser Ala Leu Arg Glu
 65 70 75 80
 Leu Lys Thr Val Ser Ala Asp Gln Leu Ala Arg Glu Glu Gln Ile Glu
 85 90 95
 Asn Pro Arg Gln Ser Arg Phe Val Leu Gly Ala Ile Ala Leu Gly Val
 100 105 110
 Ala Thr Ala Ala Ala Val Thr Ala Gly Ile Ala Ile Ala Lys Thr Ile
 115 120 125
 Arg Leu Glu Ser Glu Val Asn Ala Ile Lys Gly Ala Leu Lys Gln Thr
 130 135 140
 Asn Glu Ala Val Ser Thr Leu Gly Asn Gly Val Arg Val Leu Ala Thr
 145 150 155 160
 Ala Val Arg Glu Leu Lys Glu Phe Val Ser Lys Asn Leu Thr Ser Ala
 165 170 175
 Ile Asn Arg Asn Lys Cys Asp Ile Ala Asp Leu Lys Met Ala Val Ser
 180 185 190
 Phe Ser Gln Phe Asn Arg Arg Phe Leu Asn Val Val Arg Gln Phe Ser
 195 200 205
 Asp Asn Ala Gly Ile Thr Pro Ala Ile Ser Leu Asp Leu Met Thr Asp
 210 215 220
 Ala Glu Leu Ala Arg Ala Val Ser Tyr Met Pro Thr Ser Ala Gly Gln
 225 230 235 240
 Ile Lys Leu Met Leu Glu Asn Arg Ala Met Val Arg Arg Lys Gly Phe
 245 250 255
 Gly Ile Leu Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln
 260 265 270
 Leu Pro Ile Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala
 275 280 285
 Ala Pro Ser Cys Ser Glu Lys Asn Gly Asn Tyr Ala Cys Leu Leu Arg
 290 295 300
 Glu Asp Gln Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr
 305 310 315 320
 Pro Asn Glu Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp
 325 330 335
 Thr Ala Ala Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile
 340 345 350
 Asn Ile Ser Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His
 355 360 365
 Pro Ile Ser Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys
 370 375 380
 Tyr Lys Gly Val Ser Cys Ser Ile Gly Ser Asn Trp Val Gly Ile Ile
 385 390 395 400
 Lys Gln Leu Pro Lys Gly Cys Ser Tyr Ile Thr Asn Gln Asp Ala Asp
 405 410 415
 Thr Val Thr Ile Asp Asn Thr Val Tyr Gln Leu Ser Lys Val Glu Gly
 420 425 430
 Glu Gln His Val Ile Lys Gly Arg Pro Val Ser Ser Ser Phe Asp Pro
 435 440 445
 Ile Lys Phe Pro Glu Asp Gln Phe Asn Val Ala Leu Asp Gln Val Phe
 450 455 460
 Glu Ser Ile Glu Asn Ser Gln Ala Leu Val Asp Gln Ser Asn Lys Ile
 465 470 475 480
 Leu Asn Ser Ala Glu Lys Gly Asn Thr Gly Phe Ile Ile Val Val Ile
 485 490 495
 Leu Val Ala Val Leu Gly Leu Thr Met Ile Ser Val Ser Ile Ile Ile

500	505	510
Ile Ile Lys Lys Thr Arg Lys Pro Thr Gly Ala Pro Pro Glu Leu Asn		
515	520	525
Gly Val Thr Asn Gly Gly Phe Ile Pro His Ser		
530	535	

<210> 317
 <211> 539
 <212> PRT
 <213> human metapneumo virus

<400> 317
 Met Ser Trp Lys Val Met Ile Ile Ser Leu Leu Ile Thr Pro Gln
 1 5 10 15
 His Gly Leu Lys Glu Ser Tyr Leu Glu Ser Cys Ser Thr Ile Thr
 20 25 30
 Glu Gly Tyr Leu Ser Val Leu Arg Thr Gly Trp Tyr Thr Asn Val Phe
 35 40 45
 Thr Leu Glu Val Gly Asp Val Glu Asn Leu Thr Cys Thr Asp Gly Pro
 50 55 60
 Ser Leu Ile Lys Thr Glu Leu Asp Leu Thr Lys Ser Ala Leu Arg Glu
 65 70 75 80
 Leu Lys Thr Val Ser Ala Asp Gln Leu Ala Arg Glu Glu Gln Ile Glu
 85 90 95
 Asn Pro Arg Gln Ser Arg Phe Val Leu Gly Ala Ile Ala Leu Gly Val
 100 105 110
 Ala Thr Ala Ala Ala Val Thr Ala Gly Ile Ala Ile Ala Lys Thr Ile
 115 120 125
 Arg Leu Glu Ser Glu Val Asn Ala Ile Lys Gly Ala Leu Lys Thr Thr
 130 135 140
 Asn Glu Ala Val Ser Thr Leu Gly Asn Gly Val Arg Val Leu Ala Thr
 145 150 155 160
 Ala Val Arg Glu Leu Lys Glu Phe Val Ser Lys Asn Leu Thr Ser Ala
 165 170 175
 Ile Asn Lys Asn Lys Cys Asp Ile Ala Asp Leu Lys Met Ala Val Ser
 180 185 190
 Phe Ser Gln Phe Asn Arg Arg Phe Leu Asn Val Val Arg Gln Phe Ser
 195 200 205
 Asp Asn Ala Gly Ile Thr Pro Ala Ile Ser Leu Asp Leu Met Thr Asp
 210 215 220
 Ala Glu Leu Ala Arg Ala Val Ser Tyr Met Pro Thr Ser Ala Gly Gln
 225 230 235 240
 Ile Lys Leu Met Leu Glu Asn Arg Ala Met Val Arg Arg Lys Gly Phe
 245 250 255
 Gly Ile Leu Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln
 260 265 270
 Leu Pro Ile Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Ile Lys Ala
 275 280 285
 Ala Pro Ser Cys Ser Glu Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg
 290 295 300
 Glu Asp Gln Gly Trp Tyr Cys Lys Asn Ala Gly Ser Thr Val Tyr Tyr
 305 310 315 320
 Pro Asn Glu Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp
 325 330 335
 Thr Ala Ala Gly Ile Asn Val Ala Glu Gln Ser Arg Glu Cys Asn Ile
 340 345 350
 Asn Ile Ser Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His
 355 360 365
 Pro Ile Ser Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys
 370 375 380

Tyr Lys Gly Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile
 385 390 395 400
 Lys Gln Leu Pro Lys Gly Cys Ser Tyr Ile Thr Asn Gln Asp Ala Asp
 405 410 415
 Thr Val Thr Ile Asn Thr Val Tyr Gln Leu Ser Lys Val Glu Gly
 420 425 430
 Glu Gln His Val Ile Lys Gly Arg Pro Val Ser Ser Phe Asp Pro
 435 440 445
 Ile Arg Phe Pro Glu Asp Gln Phe Asn Val Ala Leu Asp Gln Val Phe
 450 455 460
 Glu Ser Ile Glu Asn Ser Gln Ala Leu Val Asp Gln Ser Asn Lys Ile
 465 470 475 480
 Leu Asn Ser Ala Glu Lys Gly Asn Thr Gly Phe Ile Ile Val Ile Ile
 485 490 495
 Leu Ile Ala Val Leu Gly Leu Thr Met Ile Ser Val Ser Ile Ile Ile
 500 505 510
 Ile Ile Lys Lys Thr Arg Lys Pro Thr Gly Ala Pro Pro Glu Leu Asn
 515 520 525
 Gly Val Thr Asn Gly Gly Phe Ile Pro His Ser
 530 535

<210> 318
 <211> 1620
 <212> DNA
 <213> human metapneumo virus

<400> 318
 atgtcttgaa aagtgggtat catttttca ttgttaataa cacctcaaca cggctttaaa 60
 gagagctact tagaagagtc atgttagact ataactgaag gatatctcag tggcttgagg 120
 acagggttggt acaccaatgt ttttacactg gaggttaggcg atgttagagaa ctttacatgt 180
 gccgatggac ccagcttaat aaaaacagaa tttagacctga ccaaaaagtgc actaagagag 240
 ctcagaacag tttctgctga tcaactggca agagaggagc aaattgaaaaa tcccagacaa 300
 tctagattcg ttcttaggagc aatagcactc ggtgttgc aaatggccatc 360
 ggtgttgc aaatggccatc catccggctt gaaagtgaag taacagcaat taagaatgcc 420
 ctcaaaaaga ccaatgaagc agtatctaca ttggggatag gagttcgtgt gttggcaact 480
 gcagtgagag agctgaaaga ttttgtgagc aagaatctaa cacgtgcaat caacaaaaac 540
 aagtgcgaca ttgctgaccc gaaaatggcc gttagcttca gtcaattcaa cagaagggttc 600
 ctaaatgttgc tggccaaattt tcagacaac gcttggaaataa caccagcaat atctttggac 660
 ttaatgacag atgctgaact agccagagct gtttccaaca tgccaaacatc tgccaggacaa 720
 ataaaaactga tggggagaa ccgtgcaatg gtaagaagaa aagggttcgg aatcctgata 780
 ggagtttacg gaagctccgt aatttacatg gtcaactgc caatcttgg gtttatagac 840
 acgccttgcg ggtatgtaaa agcagccct tcttggctt gaaaaaaaggaaactatgtct 900
 tgcctcttaa gagaagacca aggtggat tgcataatg cagggtaac tgggttactac 960
 ccaaatgaaa aagactgtga aacaagagga gaccatgtct tttgcacac agcagcagga 1020
 atcaatgttgc tggcggatc aaaggagtgc aacataaaaca tatctactac taattacc 1080
 tgccaaatgttgc acatccttgc agtatggttt cactatctcc tcttggggct 1140
 ttgggttgc tccatcataa agtgagctgt tccatcataa gcaacagatc agggatcatc 1200
 aagcaactga acaaaggctg ctcttatata accaaccaag acgcagacac agtgcacata 1260
 gacaacactg tataccagct aagcaaaagtt gaaggcgaac agcatgttat aaaaggaagg 1320
 ccagtgtcaa gcagcttgc cccagtcag ttcccttgc agtgcacatc tggatcataa 1380
 gaccaagtt tcgagagcat tgagaacagt caggccttgg tggatcataa aacacagaatc 1440
 ctaagcactg cagagaaagg aaacactggc ttcatcatttgc taataattct aattgctgtc 1500
 cttggctcta ccatgatcct agtgagtgaa tttatcataa taaagaaaac aaagaaaaccc 1560
 acaggagcac ctccagagct gatgggtgc acaaacaatg gcttcataacc acataattag 1620

<210> 319
 <211> 1620
 <212> DNA
 <213> human metapneumo virus

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<210> 320
<211> 1620
<212> DNA
<213> human metapneumo virus
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<400> 320
atgtcttgg aagtgtat catcatttcg ttactcataa caccggcagca cgggctaaag 60
gagagttatt tggagaatc atgttagtact ataactgagg gataacctag tggtttaaaga 120
acaggctgg acaactaatgt cttcacatta gaagttggg atgttggaaa tcttacatgt 180
actgtatggac cttagcttaat caaaaacagaa cttgatctaa caaaaagtgc tttaaggaa 240
ctcaaaacag tctctgctga tcagttggcg agagaggagc aaattgaaa tcccagacaa 300
tcaagatttgc tcttaggtgc gatagctctc ggagttgcta cagcagcagc agtcacagca 360
ggcattgcaa tagccaaaac cataaggctt gagagtggg tgaatgcaat taaaggtgct 420
ctcaaaacaaa ctaatgaagc agtattccaca tttaggaaatg gtgtcggggt cctagccact 480
gcagtgagag agctaaaaga atttggagc aaaaacctga ctatgtcaat caacaggaaac 540
aaatgtgaca ttgctgatct gaagatggct gtcagcttca gtcaattcaa cagaagattt 600
ctaaatgttg tgcggcagtt ttcagacaat gcagggataa caccagcaat atcattggac 660
ctgatgactg atgctgagtt ggccagagct gatcataca tgccaaacatc tgcagggcag 720
ataaaaactga tggggagaa ccgcgcataat gtaaggagaa aaggattttgg aatcctgata 780
ggggtctacg gaagctctgt gatttacatg gttcaattgc cgatctttgg tgcataat 840
acaccttgg tggatcatcaa ggcagctccc tcttgcctag aaaaaaaacgg gaattatgct 900
tgcctctaa gagaggatca agggtggtat tgtaaaaatg caggatctac tggtttactac 960
ccaaatgaaa aagactgcga aacaagaggt gatcatgtt tttgtgacac agcagcaggg 1020
atcaatgttg ctgagcaatc aagagaatgc aacatcaaca tatctactac caactaccca 1080
tgcaaagtca gcacaggaag acaccctata agcatgggtg cactatcacc tctcgggtgct 1140
ttggtggtt gctataaaagg ggttaagctgc tcgattggca gcaattgggt tggaatcatc 1200
aaacaattac ccaaaggctg ctcatacata accaaccagg atgcagacac tgtaacaatt 1260
gacaataccg tggatcaact aagcaaaaggtaa gagggtgaac agcatgtaat aaaagggaga 1320
ccagttcaa gcagtttga tccaaatcaag tttcctgagg atcagttcaa tggtgcgctt 1380
qatcaagtct tcgaaaggcat tgagaacagt caggcactag tggaccagtc aaacaaaatt 1440

ctaaacagt cagaaaaagg aaacactgg ttcattatcg tagtaatttt gtttgcgtt 1500
cttggtctaa ccatgattc agtgagcatc atcatcataa tcaagaaaac aaggaagccc 1560
acaggagcac ctccagagct gaatggtgcc accaacggcg gtttcatacc acatagttag 1620

<210> 321
<211> 1620
<212> DNA
<213> human metapneumo virus

<400> 321
atgtcttgg aagtgtat tatcatttcg ttactcataa cacctcagca cggactaaaa 60
gaaagttatt tagaagaatc atgttagtact ataactgaag gatatctcg ttttttaaga 120
acagggttggt acaccaatgt ctttacatta gaagttgggt atgttggaaa ttctacatgt 180
actgtatggac ctagcttaat caaaacagaa cttgacctaa cccaaaagtgc tctgagagaa 240
ctaaaaacag tttctgctga tcagttagcg agagaagaac aaatttggaaa tcccagacaa 300
tcaaggtttgc tccttaggtgc aatagctt ggagttgcca cagcagcagc agtcacagca 360
ggcattgcaaa tagccaaaac cataagactt gagagtgaag tgaatgcaat caaaggtgt 420
ctaaaaacaa ccaacgaggc agtatccaca ctaggaaatg gagtgcgagt cctagccact 480
gcagtaagag agctgaaaga atttgtgagc aaaaacctga ctagtgcgt caacaagaac 540
aaatgtgaca ttgtgtatct gaagatggct gtcagcttca gtcaattcaa cagaagattc 600
ctaaatgtt tgccgcgtt ttccagacaat gcagggtataa caccagcaat atcattggac 660
ctaatgactg atgtcgatc ggcgcagact gtatcataca tgcccaatc tgcaggacag 720
ataaaaactaa tgtagagaa ccgtgcata gtagggagaa aaggatttgg aatcttgata 780
gggggtctacg gaagctctgt gatttacatg gtcagctgc cgatcttgg tgcataatg 840
acacccgtt ggataatcaa ggcagctccc tcttggtagt aaaaagatgg aaattatgt 900
tgccctctaa gagaggatca aggggtgtat tgcaaaaatg caggatccac tgtttactac 960
ccaaatgaaa aagactgcga aacaagaggt gatcatgtt tttgtgacac acgcagcaggg 1020
atcaatgtt ctgagcaatc aagagaatgc aacatcaaca tatctaccac caactaccca 1080
tgccaaatgcg gcacaggaag acacccatc agcatggttt cactatcacc tctcggtgt 1140
tttgttagctt gctacaaggg ggttagctgc tcgattggca gtaatcggt tggataatc 1200
aaacaactac cttaaggctg ctcatacata actaaccagg acgcagacac tggataacatt 1260
gacaacactg tggatcaact aagcaaagtt gagggtgaac agcatgtaat aaaaaggaga 1320
ccagtttcaa gcagtttga tccaatcagg ttccctgagg atcagttcaa tggatcggtt 1380
gatcaagctt ttgaaaagcat tgaaaacagt caagcactag tggaccagtc aaacaaaatt 1440
ctgaacacgtt cagaaaaagg aaacactggt ttccattttt tataattt gattgctgtt 1500
cttgggttaa ccatgattc agtgagcatc atcatcataa tcaaaaaaac aaggaagccc 1560
acaggggcac ctccagagct gaatggtgtt accaacggcg gtttataacc gcataatgtt 1620

<210> 322
<211> 236
<212> PRT
<213> human metapneumo virus

<400> 322
Met Glu Val Lys Val Glu Asn Ile Arg Thr Ile Asp Met Leu Lys Ala
1 5 10 15
Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser
20 25 30
Leu Val Leu Ile Gly Ile Thr Thr Leu Ser Ile Ala Leu Asn Ile Tyr
35 40 45
Leu Ile Ile Asn Tyr Lys Met Gln Lys Asn Thr Ser Glu Ser Glu His
50 55 60
His Thr Ser Ser Ser Pro Met Glu Ser Ser Arg Glu Thr Pro Thr Val
65 70 75 80
Pro Thr Asp Asn Ser Asp Thr Asn Ser Ser Pro Gln His Pro Thr Gln
85 90 95
Gln Ser Thr Glu Gly Ser Thr Leu Tyr Phe Ala Ala Ser Ala Ser Ser
100 105 110
Pro Glu Thr Glu Pro Thr Ser Thr Pro Asp Thr Thr Asn Arg Pro Pro

115	120	125
Phe Val Asp Thr His Thr Thr	Pro Pro Ser Ala Ser Arg Thr Lys Thr	
130	135	140
Ser Pro Ala Val His Thr Lys Asn Asn Pro Arg Thr Ser Ser Arg Thr		
145	150	155
His Ser Pro Pro Arg Ala Thr Thr Arg Thr Ala Arg Arg Thr Thr Thr		
165	170	175
Leu Arg Thr Ser Ser Thr Arg Lys Arg Pro Ser Thr Ala Ser Val Gln		
180	185	190
Pro Asp Ile Ser Ala Thr Thr His Lys Asn Glu Glu Ala Ser Pro Ala		
195	200	205
Ser Pro Gln Thr Ser Ala Ser Thr Thr Arg Ile Gln Arg Lys Ser Val		
210	215	220
Glu Ala Asn Thr Ser Thr Thr Tyr Asn Gln Thr Ser		
225	230	235

<210> 323
 <211> 219
 <212> PRT
 <213> human metapneumo virus

<400> 323

Met Glu Val Lys Val Glu Asn Ile Arg Ala Ile Asp Met Leu Lys Ala			
1	5	10	15
Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser			
20	25	30	
Leu Ile Leu Ile Gly Ile Thr Thr Leu Ser Ile Ala Leu Asn Ile Tyr			
35	40	45	
Leu Ile Ile Asn Tyr Thr Ile Gln Lys Thr Thr Ser Glu Ser Glu His			
50	55	60	
His Thr Ser Ser Pro Pro Thr Glu Pro Asn Lys Glu Ala Ser Thr Ile			
65	70	75	80
Ser Thr Asp Asn Pro Asp Ile Asn Pro Ser Ser Gln His Pro Thr Gln			
85	90	95	
Gln Ser Thr Glu Asn Pro Thr Leu Asn Pro Ala Ala Ser Ala Ser Pro			
100	105	110	
Ser Glu Thr Glu Pro Ala Ser Thr Pro Asp Thr Thr Asn Arg Leu Ser			
115	120	125	
Ser Val Asp Arg Ser Thr Ala Gln Pro Ser Glu Ser Arg Thr Lys Thr			
130	135	140	
Lys Pro Thr Val His Thr Ile Asn Asn Pro Asn Thr Ala Ser Ser Thr			
145	150	155	160
Gln Ser Pro Pro Arg Thr Thr Lys Ala Ile Arg Arg Ala Thr Thr			
165	170	175	
Phe Arg Met Ser Ser Thr Gly Lys Arg Pro Thr Thr Thr Leu Val Gln			
180	185	190	
Ser Asp Ser Ser Thr Thr Gln Asn His Glu Glu Thr Gly Ser Ala			
195	200	205	
Asn Pro Gln Ala Ser Ala Ser Thr Met Gln Asn			
210	215		

<210> 324
 <211> 224
 <212> PRT
 <213> human metapneumo virus

<400> 324

Met Glu Val Arg Val Glu Asn Ile Arg Ala Ile Asp Met Phe Lys Ala			
1	5	10	15

Lys Ile Lys Asn Arg Ile Arg Ser Ser Arg Cys Tyr Arg Asn Ala Thr
 20 25 30
 Leu Ile Leu Ile Gly Leu Thr Ala Leu Ser Met Ala Leu Asn Ile Phe
 35 40 45
 Leu Ile Ile Asp His Ala Thr Leu Arg Asn Met Ile Lys Thr Glu Asn
 50 55 60
 Cys Ala Asn Met Pro Ser Ala Glu Pro Ser Lys Lys Thr Pro Met Thr
 65 70 75 80
 Ser Thr Ala Gly Pro Asn Thr Lys Pro Asn Pro Gln Gln Ala Thr Gln
 85 90 95
 Trp Thr Thr Glu Asn Ser Thr Ser Pro Val Ala Thr Pro Glu Gly His
 100 105 110
 Pro Tyr Thr Gly Thr Thr Gln Thr Ser Asp Thr Thr Ala Pro Gln Gln
 115 120 125
 Thr Thr Asp Lys His Thr Ala Pro Leu Lys Ser Thr Asn Glu Gln Ile
 130 135 140
 Thr Gln Thr Thr Thr Glu Lys Lys Thr Ile Arg Ala Thr Thr Gln Lys
 145 150 155 160
 Arg Glu Lys Gly Lys Glu Asn Thr Asn Gln Thr Thr Ser Thr Ala Ala
 165 170 175
 Thr Gln Thr Thr Asn Thr Asn Gln Ile Arg Asn Ala Ser Glu Thr
 180 185 190
 Ile Thr Thr Ser Asp Arg Pro Arg Thr Asp Thr Thr Gln Ser Ser
 195 200 205
 Glu Gln Thr Thr Arg Ala Thr Asp Pro Ser Ser Pro Pro His His Ala
 210 215 220

<210> 325
 <211> 236
 <212> PRT
 <213> human metapneumo virus

<400> 325
 Met Glu Val Arg Val Glu Asn Ile Arg Ala Ile Asp Met Phe Lys Ala
 1 5 10 15
 Lys Met Lys Asn Arg Ile Arg Ser Ser Lys Cys Tyr Arg Asn Ala Thr
 20 25 30
 Leu Ile Leu Ile Gly Leu Thr Ala Leu Ser Met Ala Leu Asn Ile Phe
 35 40 45
 Leu Ile Ile Asp Tyr Ala Met Leu Lys Asn Met Thr Lys Val Glu His
 50 55 60
 Cys Val Asn Met Pro Pro Val Glu Pro Ser Lys Lys Thr Pro Met Thr
 65 70 75 80
 Ser Ala Val Asp Leu Asn Thr Lys Pro Asn Pro Gln Gln Ala Thr Gln
 85 90 95
 Leu Ala Ala Glu Asp Ser Thr Ser Leu Ala Ala Thr Ser Glu Asp His
 100 105 110
 Leu His Thr Gly Thr Thr Pro Thr Pro Asp Ala Thr Val Ser Gln Gln
 115 120 125
 Thr Thr Asp Glu Tyr Thr Thr Leu Leu Arg Ser Thr Asn Arg Gln Thr
 130 135 140
 Thr Gln Thr Thr Thr Glu Lys Lys Pro Thr Gly Ala Thr Thr Lys Lys
 145 150 155 160
 Glu Thr Thr Thr Arg Thr Thr Ser Thr Ala Ala Thr Gln Thr Leu Asn
 165 170 175
 Thr Thr Asn Gln Thr Ser Tyr Val Arg Glu Ala Thr Thr Ser Ala
 180 185 190
 Arg Ser Arg Asn Ser Ala Thr Thr Gln Ser Ser Asp Gln Thr Thr Gln
 195 200 205
 Ala Ala Asp Pro Ser Ser Gln Pro His His Thr Gln Lys Ser Thr Thr

210 215 220
Thr Thr Tyr Asn Thr Asp Thr Ser Ser Pro Ser Ser
225 230 235

<210> 326
<211> 708
<212> DNA
<213> human metapneumo virus

<400> 326
gaggtgaaag tggagaacat tcgaacaata gatatgctca aagcaagagt aaaaaatcgt 60
gtggcacgca gcaaattgtt taaaaatgcc tctttggtcc tcataatggaaat aactacattt 120
agtattggcc tcaatatactt tctgtatcata aactataaaa tgcaaaaaaa cacatctgaa 180
tcagaacatc acaccatc acaccatg gaatccagca gagaaactcc aacggtcccc 240
acagacaact cagcacccaa ctcaagccca cagcatccaa ctcaacatgc cacagaaggc 300
tccacactt actttgcagc ctcagcaagc tcaccagaga cagaaccaac atcaacacca 360
gatacaacaa accgcccccc cttcggtcgac acacacacaa caccaccaag cgcaaggcaga 420
acaaagacaa gtccggcagt ccacacaaaa aacaacccaa ggacaagctc tagaacacat 480
tctccaccac gggcaacgac aaggacggca cgccagaacca ccactctccg cacaaggcagc 540
acaagaaaaga gaccgtccac agcatcagtc caacctgaca tcagcgcaac aacccacaaa 600
aacgaagaag caagtccagc gagccacaa acatctgaa gcacaacaag aatacaaagg 660
aaaagcgtgg agggcaacac atcaacaaca tacaaccaaa ctagttaa 708

<210> 327
<211> 660
<212> DNA
<213> human metapneumo virus

<400> 327
atggagggtga aagtagagaa cattcgagca atagacatgc tcaaagcaag agtggaaaaat 60
cgtgtggcac gtagcaaatg cttaaaaaat gcttctttaa tcctcatagg aataactaca 120
ctgagtagat ctctcaatat ctatctgtatc ataaactaca caataaaaaa aaccacatcc 180
gaatcagaac accacacccat ctcaccaccc acagaacccaa acaaggaaagc ttcaacaatc 240
tccacagaca acccagacat caatccaaagc tcacagcatc caactcaaca gtccacagaa 300
aaccacccac tcaaccccgct agcatcagcg agcccatcag aaacagaacc agcatcaaca 360
ccagacacaa caaaccgcct gtcctccgtt gacaggtcca cagcacaacc aagtggaaagc 420
agaacaaaga caaaaccgcac agtccacaca atcaacaacc caaacacagc ttccagtaca 480
caatccac cacggacaac aacgaaggca atccgcagag ccaccactt ccgcattgagc 540
agcacaggaa aaagaccaac cacaacatta gtccagtcgg acagcagcac cacaacccaa 600
aatcatgaag aaacaggttc agcgaacccca caggcgtctg caagcacaat gcaaaactag 660

<210> 328
<211> 675
<212> DNA
<213> human metapneumo virus

<400> 328
atgaaagttaa gagtggagaa cattcgagcg atagacatgt tcaaagcaaa gataaaaaac 60
cgtataagaa gcagcagggt ctatagaaat gctacactga tccttattgg actaacagcg 120
ttaagcatgg cacttaatat ttctctgtatc atcgatcatg caacatggaaat aaacatgtatc 180
aaaacagaaaa actgtgtctaa catgccgtcg gcagaacccaa gcaaaaaagac cccaatgacc 240
tccacagcgag gccccaaacac caaaccatccat ccacagcaag caacacatgt gaccacagag 300
aactcaacat cccccactgc aaccccgagag ggcctatccat acacagggac aactcaaaaca 360
tcagacacaa cagctccccca gcaaaaccaca gacaaacaca cagcaccgtt aaaatcaacc 420
aatgaacaga tcaccccgac aaccacagag aaaaagacaa tcagagcaac aacccaaaaa 480
agggaaaaag gaaaagaaaa caaaaacccaa accacaagca cagctgcaac caaacacaacc 540
aacaccacca accaaatcg aaatgcaagt gagacaatca caacatccga cagacccaga 600
actgacacca caacccaaag cagcgaacacag acaacccggg caacagaccc aagctcccc 660
ccacaccatg catag 675

<210> 329
 <211> 711
 <212> DNA
 <213> human metapneumo virus

<400> 329
 atggaaagtaa gagtggagaa cattcgggca atagacatgt tcaaagcaaa aatgaaaaac 60
 cgtataagaa gtagcaagtg ctatagaaat gctacactga tccttattgg attaacagca 120
 ttaagtatgg cacttaatat ttttttatac attgattatg caatgttaaa aaacatgacc 180
 aaagtggAAC actgtgttaa tatgccgccc gtagaaccaa gcaagaagac cccaatgacc 240
 tctgcagtag acttaaacac caaaccat ccacagcagg caacacagtt ggccgcagag 300
 gattcaacat ctcttagcagc aacctcagag gaccatctac acacagggac aactccaaca 360
 ccagatgcaa cagtctctca gcaaaccaca gacgagtaca caacattgct gagatcaacc 420
 aacagacaga ccacccaaac aaccacagag aaaaagccaa ccggagcaac aaccaaaaaa 480
 gaaaccacaa ctcgaactac aagcacagct gcaacccaaa cactcaacac taccaaccaa 540
 actagctatg tgagagagggc aaccacaaca tccgcccagat ccagaaacag tgccacaact 600
 caaaggcagcg accaaacaac ccaggcagca gacccaaagct cccaaaccaca ccatacacag 660
 aaaaggcaca caacaacata caacacagac acatcctctc caagtgtta a 711

<210> 330
 <211> 2005
 <212> PRT
 <213> human metapneumo virus

<400> 330
 Met Asp Pro Leu Asn Glu Ser Thr Val Asn Val Tyr Leu Pro Asp Ser
 1 5 10 15
 Tyr Leu Lys Gly Val Ile Ser Phe Ser Glu Thr Asn Ala Ile Gly Ser
 20 25 30
 Cys Leu Leu Lys Arg Pro Tyr Leu Lys Asn Asp Asn Thr Ala Lys Val
 35 40 45
 Ala Ile Glu Asn Pro Val Ile Glu His Val Arg Leu Lys Asn Ala Val
 50 55 60
 Asn Ser Lys Met Lys Ile Ser Asp Tyr Lys Ile Val Glu Pro Val Asn
 65 70 75 80
 Met Gln His Glu Ile Met Lys Asn Val His Ser Cys Glu Leu Thr Leu
 85 90 95
 Leu Lys Gln Phe Leu Thr Arg Ser Lys Asn Ile Ser Thr Leu Lys Leu
 100 105 110
 Asn Met Ile Cys Asp Trp Leu Gln Leu Lys Ser Thr Ser Asp Asp Thr
 115 120 125
 Ser Ile Leu Ser Phe Ile Asp Val Glu Phe Ile Pro Ser Trp Val Ser
 130 135 140
 Asn Trp Phe Ser Asn Trp Tyr Asn Leu Asn Lys Leu Ile Leu Glu Phe
 145 150 155 160
 Arg Lys Glu Glu Val Ile Arg Thr Gly Ser Ile Leu Cys Arg Ser Leu
 165 170 175
 Gly Lys Leu Val Phe Val Val Ser Ser Tyr Gly Cys Ile Val Lys Ser
 180 185 190
 Asn Lys Ser Lys Arg Val Ser Phe Phe Thr Tyr Asn Gln Leu Leu Thr
 195 200 205
 Trp Lys Asp Val Met Leu Ser Arg Phe Asn Ala Asn Phe Cys Ile Trp
 210 215 220
 Val Ser Asn Ser Leu Asn Glu Asn Gln Glu Gly Leu Gly Leu Arg Ser
 225 230 235 240
 Asn Leu Gln Gly Ile Leu Thr Asn Lys Leu Tyr Glu Thr Val Asp Tyr
 245 250 255
 Met Leu Ser Leu Cys Cys Asn Glu Gly Phe Ser Leu Val Lys Glu Phe
 260 265 270
 Glu Gly Phe Ile Met Ser Glu Ile Leu Arg Ile Thr Glu His Ala Gln

275	280	285
Phe Ser Thr Arg Phe Arg Asn Thr	Leu Leu Asn Gly	Leu Thr Asp Gln
290	295	300
Leu Thr Lys Leu Lys Asn Lys	Arg Leu Arg Val His	Gly Thr Val
305	310	315
Leu Glu Asn Asn Asp Tyr	Pro Met Tyr Glu Val Val	Leu Lys Leu
325	330	335
Gly Asp Thr Leu Arg Cys Ile	Lys Leu Ile Asn Lys	Asn Leu Glu
340	345	350
Asn Ala Ala Glu Leu Tyr	Tyr Ile Phe Arg Ile	Phe Gly His Pro Met
355	360	365
Val Asp Glu Arg Asp Ala	Met Asp Ala Val Lys	Leu Asn Asn Glu Ile
370	375	380
Thr Lys Ile Leu Arg Trp	Glu Ser Leu Thr Glu	Leu Arg Gly Ala Phe
385	390	395
Ile Leu Arg Ile Ile Lys	Gly Phe Val Asp Asn	Asn Lys Arg Trp Pro
405	410	415
Lys Ile Lys Asn Leu Lys	Val Leu Ser Lys Arg	Trp Thr Met Tyr Phe
420	425	430
Lys Ala Lys Ser Tyr Pro	Ser Gln Leu Glu Leu	Ser Glu Gln Asp Phe
435	440	445
Leu Glu Leu Ala Ala Ile	Gln Phe Glu Gln Glu	Phe Ser Val Pro Glu
450	455	460
Lys Thr Asn Leu Glu	Met Val Leu Asn Asp	Lys Ala Ile Ser Pro Pro
465	470	475
Lys Arg Leu Ile Trp	Ser Val Tyr Pro	Lys Asn Tyr Leu Pro Glu Lys
485	490	495
Ile Lys Asn Arg Tyr	Leu Glu Glu Thr Phe	Asn Ala Ser Asp Ser Leu
500	505	510
Lys Thr Arg Arg Val	Leu Glu Tyr Tyr	Leu Lys Asp Asn Lys Phe Asp
515	520	525
Gln Lys Glu Leu Lys	Ser Tyr Val Val Lys	Gln Glu Tyr Leu Asn Asp
530	535	540
Lys Asp His Ile Val	Ser Leu Thr Gly	Lys Glu Arg Glu Leu Ser Val
545	550	555
Gly Arg Met Phe Ala	Met Gln Pro Gly	Lys Gln Arg Gln Ile Gln Ile
565	570	575
Leu Ala Glu Lys Leu	Leu Ala Asp Asn Ile	Val Pro Phe Phe Pro Glu
580	585	590
Thr Leu Thr Lys Tyr	Gly Asp Leu Asp	Leu Gln Arg Ile Met Glu Ile
595	600	605
Lys Ser Glu Leu Ser	Ser Ile Lys Thr Arg	Arg Asn Asp Ser Tyr Asn
610	615	620
Asn Tyr Ile Ala Arg	Ala Ser Ile Val	Thr Asp Leu Ser Lys Phe Asn
625	630	635
Gln Ala Phe Arg Tyr	Glu Thr Thr Ala	Ile Cys Ala Asp Val Ala Asp
645	650	655
Glu Leu His Gly	Thr Gln Ser Leu Phe	Cys Trp Leu His Leu Ile Val
660	665	670
Pro Met Thr Thr Met	Ile Cys Ala Tyr	Arg His Ala Pro Pro Glu Thr
675	680	685
Lys Gly Glu Tyr Asp	Ile Asp Lys Ile	Glu Glu Gln Ser Gly Leu Tyr
690	695	700
Arg Tyr His Met Gly	Gly Ile Glu Gly	Trp Cys Gln Lys Leu Trp Thr
705	710	715
Met Glu Ala Ile Ser	Leu Leu Asp Val	Val Ser Val Lys Thr Arg Cys
725	730	735
Gln Met Thr Ser	Leu Leu Asn Gly	Asp Asn Gln Ser Ile Asp Val Ser
740	745	750
Lys Pro Val Lys	Leu Ser Glu Gly	Leu Asp Glu Val Lys Ala Asp Tyr
755	760	765

Ser Leu Ala Val Lys Met Leu Lys Glu Ile Arg Asp Ala Tyr Arg Asn
 770 775 780
 Ile Gly His Lys Leu Lys Glu Gly Glu Thr Tyr Ile Ser Arg Asp Leu
 785 790 795 800
 Gln Phe Ile Ser Lys Val Ile Gln Ser Glu Gly Val Met His Pro Thr
 805 810 815
 Pro Ile Lys Lys Ile Leu Arg Val Gly Pro Trp Ile Asn Thr Ile Leu
 820 825 830
 Asp Asp Ile Lys Thr Ser Ala Glu Ser Ile Gly Ser Leu Cys Gln Glu
 835 840 845
 Leu Glu Phe Arg Gly Glu Ser Ile Ile Val Ser Leu Ile Leu Arg Asn
 850 855 860
 Phe Trp Leu Tyr Asn Leu Tyr Met His Glu Ser Lys Gln His Pro Leu
 865 870 875 880
 Ala Gly Lys Gln Leu Phe Lys Gln Leu Asn Lys Thr Leu Thr Ser Val
 885 890 895
 Gln Arg Phe Phe Glu Ile Lys Lys Glu Asn Glu Val Val Asp Leu Trp
 900 905 910
 Met Asn Ile Pro Met Gln Phe Gly Gly Asp Pro Val Val Phe Tyr
 915 920 925
 Arg Ser Phe Tyr Arg Arg Thr Pro Asp Phe Leu Thr Glu Ala Ile Ser
 930 935 940
 His Val Asp Ile Leu Leu Arg Ile Ser Ala Asn Ile Arg Asn Glu Ala
 945 950 955 960
 Lys Ile Ser Phe Phe Lys Ala Leu Leu Ser Ile Glu Lys Asn Glu Arg
 965 970 975
 Ala Thr Leu Thr Leu Met Arg Asp Pro Gln Ala Val Gly Ser Glu
 980 985 990
 Arg Gln Ala Lys Val Thr Ser Asp Ile Asn Arg Thr Ala Val Thr Ser
 995 1000 1005
 Ile Leu Ser Leu Ser Pro Asn Gln Leu Phe Ser Asp Ser Ala Ile His
 1010 1015 1020
 Tyr Ser Arg Asn Glu Glu Val Gly Ile Ile Ala Asp Asn Ile Thr
 1025 1030 1035 1040
 Pro Val Tyr Pro His Gly Leu Arg Val Leu Tyr Glu Ser Leu Pro Phe
 1045 1050 1055
 His Lys Ala Glu Lys Val Val Asn Met Ile Ser Gly Thr Lys Ser Ile
 1060 1065 1070
 Thr Asn Leu Leu Gln Arg Thr Ser Ala Ile Asn Gly Glu Asp Ile Asp
 1075 1080 1085
 Arg Ala Val Ser Met Met Leu Glu Asn Leu Gly Leu Leu Ser Arg Ile
 1090 1095 1100
 Leu Ser Val Val Val Asp Ser Ile Glu Ile Pro Thr Lys Ser Asn Gly
 1105 1110 1115 1120
 Arg Leu Ile Cys Cys Gln Ile Ser Arg Thr Leu Arg Glu Thr Ser Trp
 1125 1130 1135
 Asn Asn Met Glu Ile Val Gly Val Thr Ser Pro Ser Ile Thr Thr Cys
 1140 1145 1150
 Met Asp Val Ile Tyr Ala Thr Ser Ser His Leu Lys Gly Ile Ile Ile
 1155 1160 1165
 Glu Lys Phe Ser Thr Asp Arg Thr Thr Arg Gly Gln Arg Gly Pro Lys
 1170 1175 1180
 Ser Pro Trp Val Gly Ser Ser Thr Gln Glu Lys Lys Leu Val Pro Val
 1185 1190 1195 1200
 Tyr Asn Arg Gln Ile Leu Ser Lys Gln Gln Arg Glu Gln Leu Glu Ala
 1205 1210 1215
 Ile Gly Lys Met Arg Trp Val Tyr Lys Gly Thr Pro Gly Leu Arg Arg
 1220 1225 1230
 Leu Leu Asn Lys Ile Cys Leu Gly Ser Leu Gly Ile Ser Tyr Lys Cys
 1235 1240 1245
 Val Lys Pro Leu Leu Pro Arg Phe Met Ser Val Asn Phe Leu His Arg

1250	1255	1260
Leu Ser Val Ser Ser Arg Pro Met Glu Phe Pro Ala Ser Val Pro Ala		
1265	1270	1275
Tyr Arg Thr Thr Asn Tyr His Phe Asp Thr Ser Pro Ile Asn Gln Ala		1280
1285	1290	1295
Leu Ser Glu Arg Phe Gly Asn Glu Asp Ile Asn Leu Val Phe Gln Asn		
1300	1305	1310
Ala Ile Ser Cys Gly Ile Ser Ile Met Ser Val Val Glu Gln Leu Thr		
1315	1320	1325
Gly Arg Ser Pro Lys Gln Leu Val Leu Ile Pro Gln Leu Glu Glu Ile		
1330	1335	1340
Asp Ile Met Pro Pro Val Phe Gln Gly Lys Phe Asn Tyr Lys Leu		
1345	1350	1355
Val Asp Lys Ile Thr Ser Asp Gln His Ile Phe Ser Pro Asp Lys Ile		1360
1365	1370	1375
Asp Met Leu Thr Leu Gly Lys Met Leu Met Pro Thr Ile Lys Gly Gln		
1380	1385	1390
Lys Thr Asp Gln Phe Leu Asn Lys Arg Glu Asn Tyr Phe His Gly Asn		
1395	1400	1405
Asn Leu Ile Glu Ser Leu Ser Ala Ala Leu Ala Cys His Trp Cys Gly		
1410	1415	1420
Ile Leu Thr Glu Gln Cys Ile Glu Asn Asn Ile Phe Lys Lys Asp Trp		
1425	1430	1435
Gly Asp Gly Phe Ile Ser Asp His Ala Phe Met Asp Phe Lys Ile Phe		1440
1445	1450	1455
Leu Cys Val Phe Lys Thr Lys Leu Leu Cys Ser Trp Gly Ser Gln Gly		
1460	1465	1470
Lys Asn Ile Lys Asp Glu Asp Ile Val Asp Glu Ser Ile Asp Lys Leu		
1475	1480	1485
Leu Arg Ile Asp Asn Thr Phe Trp Arg Met Phe Ser Lys Val Met Phe		
1490	1495	1500
Glu Ser Lys Val Lys Lys Arg Ile Met Leu Tyr Asp Val Lys Phe Leu		
1505	1510	1515
Ser Leu Val Gly Tyr Ile Gly Phe Lys Asn Trp Phe Ile Glu Gln Leu		1520
1525	1530	1535
Arg Ser Ala Glu Leu His Glu Val Pro Trp Ile Val Asn Ala Glu Gly		
1540	1545	1550
Asp Leu Val Glu Ile Lys Ser Ile Lys Ile Tyr Leu Gln Leu Ile Glu		
1555	1560	1565
Gln Ser Leu Phe Leu Arg Ile Thr Val Leu Asn Tyr Thr Asp Met Ala		
1570	1575	1580
His Ala Leu Thr Arg Leu Ile Arg Lys Lys Leu Met Cys Asp Asn Ala		
1585	1590	1595
Leu Leu Thr Pro Ile Pro Ser Pro Met Val Asn Leu Thr Gln Val Ile		1600
1605	1610	1615
Asp Pro Thr Glu Gln Leu Ala Tyr Phe Pro Lys Ile Thr Phe Glu Arg		
1620	1625	1630
Leu Lys Asn Tyr Asp Thr Ser Ser Asn Tyr Ala Lys Gly Lys Leu Thr		
1635	1640	1645
Arg Asn Tyr Met Ile Leu Leu Pro Trp Gln His Val Asn Arg Tyr Asn		
1650	1655	1660
Phe Val Phe Ser Ser Thr Gly Cys Lys Val Ser Leu Lys Thr Cys Ile		
1665	1670	1675
Gly Lys Leu Met Lys Asp Leu Asn Pro Lys Val Leu Tyr Phe Ile Gly		1680
1685	1690	1695
Glu Gly Ala Gly Asn Trp Met Ala Arg Thr Ala Cys Glu Tyr Pro Asp		
1700	1705	1710
Ile Lys Phe Val Tyr Arg Ser Leu Lys Asp Asp Leu Asp His His Tyr		
1715	1720	1725
Pro Leu Glu Tyr Gln Arg Val Ile Gly Glu Leu Ser Arg Ile Ile Asp		
1730	1735	1740

Ser Gly Glu Gly Leu Ser Met Glu Thr Thr Asp Ala Thr Gln Lys Thr
 1745 1750 1755 1760
 His Trp Asp Leu Ile His Arg Val Ser Lys Asp Ala Leu Leu Ile Thr
 1765 1770 1775
 Leu Cys Asp Ala Glu Phe Lys Asp Arg Asp Asp Phe Phe Lys Met Val
 1780 1785 1790
 Ile Leu Trp Arg Lys His Val Leu Ser Cys Arg Ile Cys Thr Thr Tyr
 1795 1800 1805
 Gly Thr Asp Leu Tyr Leu Phe Ala Lys Tyr His Ala Lys Asp Cys Asn
 1810 1815 1820
 Val Lys Leu Pro Phe Phe Val Arg Ser Val Ala Thr Phe Ile Met Gln
 1825 1830 1835 1840
 Gly Ser Lys Leu Ser Gly Ser Glu Cys Tyr Ile Leu Leu Thr Leu Gly
 1845 1850 1855
 His His Asn Asn Leu Pro Cys His Gly Glu Ile Gln Asn Ser Lys Met
 1860 1865 1870
 Lys Ile Ala Val Cys Asn Asp Phe Tyr Ala Ala Lys Lys Leu Asp Asn
 1875 1880 1885
 Lys Ser Ile Glu Ala Asn Cys Lys Ser Leu Leu Ser Gly Leu Arg Ile
 1890 1895 1900
 Pro Ile Asn Lys Lys Glu Leu Asn Arg Gln Arg Arg Leu Leu Thr Leu
 1905 1910 1915 1920
 Gln Ser Asn His Ser Ser Val Ala Thr Val Gly Gly Ser Lys Val Ile
 1925 1930 1935
 Glu Ser Lys Trp Leu Thr Asn Lys Ala Asn Thr Ile Ile Asp Trp Leu
 1940 1945 1950
 Glu His Ile Leu Asn Ser Pro Lys Gly Glu Leu Asn Tyr Asp Phe Phe
 1955 1960 1965
 Glu Ala Leu Glu Asn Thr Tyr Pro Asn Met Ile Lys Leu Ile Asp Asn
 1970 1975 1980
 Leu Gly Asn Ala Glu Ile Lys Lys Leu Ile Lys Val Thr Gly Tyr Met
 1985 1990 1995 2000
 Leu Val Ser Lys Lys
 2005

<210> 331
 <211> 2005
 <212> PRT
 <213> human metapneumo virus

<400> 331
 Met Asp Pro Leu Asn Glu Ser Thr Val Asn Val Tyr Leu Pro Asp Ser
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 Tyr Leu Lys Gly Val Ile Ser Phe Ser Glu Thr Asn Ala Ile Gly Ser
 20 25 30
 Cys Leu Leu Lys Arg Pro Tyr Leu Lys Asn Asp Asn Thr Ala Lys Val
 35 40 45
 Ala Ile Glu Asn Pro Val Ile Glu His Val Arg Leu Lys Asn Ala Val
 50 55 60
 Asn Ser Lys Met Lys Ile Ser Asp Tyr Lys Val Val Glu Pro Val Asn
 65 70 75 80
 Met Gln His Glu Ile Met Lys Asn Val His Ser Cys Glu Leu Thr Leu
 85 90 95
 Leu Lys Gln Phe Leu Thr Arg Ser Lys Asn Ile Ser Thr Leu Lys Leu
 100 105 110
 Asn Met Ile Cys Asp Trp Leu Gln Leu Lys Ser Thr Ser Asp Asp Thr
 115 120 125
 Ser Ile Leu Ser Phe Ile Asp Val Glu Phe Ile Pro Ser Trp Val Ser
 130 135 140
 Asn Trp Phe Ser Asn Trp Tyr Asn Leu Asn Lys Leu Ile Leu Glu Phe

145	150	155	160
Arg Arg Glu Glu Val Ile Arg Thr Gly Ser	Ile Leu Cys Arg Ser	Leu	
165	170	175	
Gly Lys Leu Val Phe Ile Val Ser Ser	Tyr Gly Cys Ile Val Lys	Ser	
180	185	190	
Asn Lys Ser Lys Arg Val Ser Phe	Phe Thr Tyr Asn Gln	Leu	Leu Thr
195	200	205	
Trp Lys Asp Val Met Leu Ser Arg Phe	Asn Ala Asn Phe Cys Ile	Trp	
210	215	220	
Val Ser Asn Ser Leu Asn Glu Asn Gln	Glu Gly Leu Gly	Leu Arg	Ser
225	230	235	240
Asn Leu Gln Gly Met Leu Thr Asn Lys	Leu Tyr Glu Thr Val Asp	Tyr	
245	250	255	
Met Leu Ser Leu Cys Cys Asn Glu	Gly Phe Ser Leu Val Lys	Glu Phe	
260	265	270	
Glu Gly Phe Ile Met Ser Glu Ile	Leu Arg Ile Thr Glu His	Ala Gln	
275	280	285	
Phe Ser Thr Arg Phe Arg Asn Thr	Leu Leu Asn Gly	Leu Thr Asp	Gln
290	295	300	
Leu Thr Lys Leu Lys Asn Asn Arg	Leu Arg Val His Gly	Thr Val	
305	310	315	320
Leu Glu Asn Asn Asp Tyr Pro Met	Tyr Glu Val Val Leu Lys	Leu	Leu
325	330	335	
Gly Asp Thr Leu Arg Cys Ile Lys	Leu Ile Asn Lys Asn	Leu Glu	
340	345	350	
Asn Ala Ala Glu Leu Tyr Tyr	Ile Phe Arg Ile Phe	Gly His	Pro Met
355	360	365	
Val Asp Glu Arg Asp Ala Met Asp	Ala Val Lys Leu Asn Asn	Glu Ile	
370	375	380	
Thr Lys Ile Leu Arg Leu Glu Ser	Leu Thr Glu Leu Arg	Gly Ala Phe	
385	390	395	400
Ile Leu Arg Ile Ile Lys Gly	Phe Val Asp Asn Asn	Lys Arg Trp	Pro
405	410	415	
Lys Ile Lys Asn Leu Ile Val	Leu Ser Lys Arg Trp	Thr Met	Tyr Phe
420	425	430	
Lys Ala Lys Asn Tyr Pro Ser	Gln Leu Glu Leu Ser	Glu Gln Asp	Phe
435	440	445	
Leu Glu Leu Ala Ala Ile Gln	Phe Glu Gln Glu	Phe Ser	Val Pro Glu
450	455	460	
Lys Thr Asn Leu Glu Met Val	Leu Asn Asp Lys Ala	Ile Ser Pro	Pro
465	470	475	480
Lys Arg Leu Ile Trp Ser Val	Tyr Pro Lys Asn Tyr	Leu Pro	Glu Thr
485	490	495	
Ile Lys Asn Arg Tyr Leu Glu	Glu Thr Phe Asn Ala	Ser Asp	Ser Leu
500	505	510	
Lys Thr Arg Arg Val Leu Glu	Tyr Tyr Leu Lys Asp	Asn Lys Phe	Asp
515	520	525	
Gln Lys Glu Leu Lys Ser	Tyr Val Val Arg	Gln Glu	Tyr Leu Asn Asp
530	535	540	
Lys Glu His Ile Val Ser	Leu Thr Gly Lys Glu	Arg Glu	Leu Ser Val
545	550	555	560
Gly Arg Met Phe Ala Met Gln	Pro Gly Lys Gln	Arg Gln	Ile Gln Ile
565	570	575	
Leu Ala Glu Lys Leu Leu Ala	Asp Asn Ile Val Pro	Phe Phe	Pro Glu
580	585	590	
Thr Leu Thr Lys Tyr Gly Asp	Leu Asp Leu Gln	Arg Ile Met	Glu Ile
595	600	605	
Lys Ser Glu Leu Ser Ser	Ile Lys Thr Arg Arg	Asn Asp	Ser Tyr Asn
610	615	620	
Asn Tyr Ile Ala Arg Ala Ser	Ile Val Thr Asp	Leu Ser	Lys Phe Asn
625	630	635	640

Gln Ala Phe Arg Tyr Glu Thr Thr Ala Ile Cys Ala Asp Val Ala Asp
 645 650 655
 Glu Leu His Gly Thr Gln Ser Leu Phe Cys Trp Leu His Leu Ile Val
 660 665 670
 Pro Met Thr Thr Met Ile Cys Ala Tyr Arg His Ala Pro Pro Glu Thr
 675 680 685
 Lys Gly Glu Tyr Asp Ile Asp Lys Ile Glu Glu Gln Ser Gly Leu Tyr
 690 695 700
 Arg Tyr His Met Gly Gly Ile Glu Gly Trp Cys Gln Lys Leu Trp Thr
 705 710 715 720
 Met Glu Ala Ile Ser Leu Leu Asp Val Val Ser Val Lys Thr Arg Cys
 725 730 735
 Gln Met Thr Ser Leu Leu Asn Gly Asp Asn Gln Ser Ile Asp Val Ser
 740 745 750
 Lys Pro Val Lys Leu Ser Glu Gly Leu Asp Glu Val Lys Ala Asp Tyr
 755 760 765
 Arg Leu Ala Ile Lys Met Leu Lys Glu Ile Arg Asp Ala Tyr Arg Asn
 770 775 780
 Ile Gly His Lys Leu Lys Glu Gly Glu Thr Tyr Ile Ser Arg Asp Leu
 785 790 795 800
 Gln Phe Ile Ser Lys Val Ile Gln Ser Glu Gly Val Met His Pro Thr
 805 810 815
 Pro Ile Lys Lys Val Leu Arg Val Gly Pro Trp Ile Asn Thr Ile Leu
 820 825 830
 Asp Asp Ile Lys Thr Ser Ala Glu Ser Ile Gly Ser Leu Cys Gln Glu
 835 840 845
 Leu Glu Phe Arg Gly Glu Ser Ile Ile Val Ser Leu Ile Leu Arg Asn
 850 855 860
 Phe Trp Leu Tyr Asn Leu Tyr Met His Glu Ser Lys Gln His Pro Leu
 865 870 875 880
 Ala Gly Lys Gln Leu Phe Lys Gln Leu Asn Lys Thr Leu Thr Ser Val
 885 890 895
 Gln Arg Phe Phe Glu Ile Lys Lys Glu Asn Glu Val Val Asp Leu Trp
 900 905 910
 Met Asn Ile Pro Met Gln Phe Gly Gly Asp Pro Val Val Phe Tyr
 915 920 925
 Arg Ser Phe Tyr Arg Arg Thr Pro Asp Phe Leu Thr Glu Ala Ile Ser
 930 935 940
 His Val Asp Ile Leu Leu Lys Ile Ser Ala Asn Ile Lys Asn Glu Thr
 945 950 955 960
 Lys Val Ser Phe Phe Lys Ala Leu Leu Ser Ile Glu Lys Asn Glu Arg
 965 970 975
 Ala Thr Leu Thr Leu Met Arg Asp Pro Gln Ala Val Gly Ser Glu
 980 985 990
 Arg Gln Ala Lys Val Thr Ser Asp Ile Asn Arg Thr Ala Val Thr Ser
 995 1000 1005
 Ile Leu Ser Leu Ser Pro Asn Gln Leu Phe Ser Asp Ser Ala Ile His
 1010 1015 1020
 Tyr Ser Arg Asn Glu Glu Val Gly Ile Ile Ala Glu Asn Ile Thr
 1025 1030 1035 1040
 Pro Val Tyr Pro His Gly Leu Arg Val Leu Tyr Glu Ser Leu Pro Phe
 1045 1050 1055
 His Lys Ala Glu Lys Val Val Asn Met Ile Ser Gly Thr Lys Ser Ile
 1060 1065 1070
 Thr Asn Leu Leu Gln Arg Thr Ser Ala Ile Asn Gly Glu Asp Ile Asp
 1075 1080 1085
 Arg Ala Val Ser Met Met Leu Glu Asn Leu Gly Leu Leu Ser Arg Ile
 1090 1095 1100
 Leu Ser Val Val Val Asp Ser Ile Glu Ile Pro Ile Lys Ser Asn Gly
 1105 1110 1115 1120
 Arg Leu Ile Cys Cys Gln Ile Ser Arg Thr Leu Arg Glu Thr Ser Trp

1125	1130	1135
Asn Asn Met Glu Ile Val Gly Val Thr Ser Pro Ser Ile Thr Thr Cys		
1140	1145	1150
Met Asp Val Ile Tyr Ala Thr Ser Ser His Leu Lys Gly Ile Ile Ile		
1155	1160	1165
Glu Lys Phe Ser Thr Asp Arg Thr Thr Arg Gly Gln Arg Gly Pro Lys		
1170	1175	1180
Ser Pro Trp Val Gly Ser Ser Thr Gln Glu Lys Lys Leu Val Pro Val		
1185	1190	1195
Tyr Asn Arg Gln Ile Leu Ser Lys Gln Gln Arg Glu Gln Leu Glu Ala		
1205	1210	1215
Ile Gly Lys Met Arg Trp Val Tyr Lys Gly Thr Pro Gly Leu Arg Arg		
1220	1225	1230
Leu Leu Asn Lys Ile Cys Leu Gly Ser Leu Gly Ile Ser Tyr Lys Cys		
1235	1240	1245
Val Lys Pro Leu Leu Pro Arg Phe Met Ser Val Asn Phe Leu His Arg		
1250	1255	1260
Leu Ser Val Ser Ser Arg Pro Met Glu Phe Pro Ala Ser Val Pro Ala		
1265	1270	1275
Tyr Arg Thr Thr Asn Tyr His Phe Asp Thr Ser Pro Ile Asn Gln Ala		
1285	1290	1295
Leu Ser Glu Arg Phe Gly Asn Glu Asp Ile Asn Leu Val Phe Gln Asn		
1300	1305	1310
Ala Ile Ser Cys Gly Ile Ser Ile Met Ser Val Val Glu Gln Leu Thr		
1315	1320	1325
Gly Arg Ser Pro Lys Gln Leu Val Leu Ile Pro Gln Leu Glu Glu Ile		
1330	1335	1340
Asp Ile Met Pro Pro Pro Val Phe Gln Gly Lys Phe Asn Tyr Lys Leu		
1345	1350	1355
Val Asp Lys Ile Thr Ser Asp Gln His Ile Phe Ser Pro Asp Lys Ile		
1365	1370	1375
Asp Met Leu Thr Leu Gly Lys Met Leu Met Pro Thr Ile Lys Gly Gln		
1380	1385	1390
Lys Thr Asp Gln Phe Leu Asn Lys Arg Glu Asn Tyr Phe His Gly Asn		
1395	1400	1405
Asn Leu Ile Glu Ser Leu Ser Ala Ala Leu Ala Cys His Trp Cys Gly		
1410	1415	1420
Ile Leu Thr Glu Gln Cys Ile Glu Asn Asn Ile Phe Lys Lys Asp Trp		
1425	1430	1435
Gly Asp Gly Phe Ile Ser Asp His Ala Phe Met Asp Phe Lys Ile Phe		
1445	1450	1455
Leu Cys Val Phe Lys Thr Lys Leu Leu Cys Ser Trp Gly Ser Gln Gly		
1460	1465	1470
Lys Asn Ile Lys Asp Glu Asp Ile Val Asp Glu Ser Ile Asp Lys Leu		
1475	1480	1485
Leu Arg Ile Asp Asn Thr Phe Trp Arg Met Phe Ser Lys Val Met Phe		
1490	1495	1500
Glu Pro Lys Val Lys Lys Arg Ile Met Leu Tyr Asp Val Lys Phe Leu		
1505	1510	1515
Ser Leu Val Gly Tyr Ile Gly Phe Lys Asn Trp Phe Ile Glu Gln Leu		
1525	1530	1535
Arg Ser Ala Glu Leu His Glu Ile Pro Trp Ile Val Asn Ala Glu Gly		
1540	1545	1550
Asp Leu Val Glu Ile Lys Ser Ile Lys Ile Tyr Leu Gln Leu Ile Glu		
1555	1560	1565
Gln Ser Leu Phe Leu Arg Ile Thr Val Leu Asn Tyr Thr Asp Met Ala		
1570	1575	1580
His Ala Leu Thr Arg Leu Ile Arg Lys Lys Leu Met Cys Asp Asn Ala		
1585	1590	1595
Leu Leu Thr Pro Ile Ser Ser Pro Met Val Asn Leu Thr Gln Val Ile		
1605	1610	1615

Asp Pro Thr Thr Gln Leu Asp Tyr Phe Pro Lys Ile Thr Phe Glu Arg
 1620 1625 1630
 Leu Lys Asn Tyr Asp Thr Ser Ser Asn Tyr Ala Lys Gly Lys Leu Thr
 1635 1640 1645
 Arg Asn Tyr Met Ile Leu Leu Pro Trp Gln His Val Asn Arg Tyr Asn
 1650 1655 1660
 Phe Val Phe Ser Ser Thr Gly Cys Lys Val Ser Leu Lys Thr Cys Ile
 1665 1670 1675 1680
 Gly Lys Leu Met Lys Asp Leu Asn Pro Lys Val Leu Tyr Phe Ile Gly
 1685 1690 1695
 Glu Gly Ala Gly Asn Trp Met Ala Arg Thr Ala Cys Glu Tyr Pro Asp
 1700 1705 1710
 Ile Lys Phe Val Tyr Arg Ser Leu Lys Asp Asp Leu Asp His His Tyr
 1715 1720 1725
 Pro Leu Glu Tyr Gln Arg Val Ile Gly Glu Leu Ser Arg Ile Ile Asp
 1730 1735 1740
 Ser Gly Glu Gly Leu Ser Met Glu Thr Thr Asp Ala Thr Gln Lys Thr
 1745 1750 1755 1760
 His Trp Asp Leu Ile His Arg Val Ser Lys Asp Ala Leu Leu Ile Thr
 1765 1770 1775
 Leu Cys Asp Ala Glu Phe Lys Asp Arg Asp Asp Phe Phe Lys Met Val
 1780 1785 1790
 Ile Leu Trp Arg Lys His Val Leu Ser Cys Arg Ile Cys Thr Thr Tyr
 1795 1800 1805
 Gly Thr Asp Leu Tyr Leu Phe Ala Lys Tyr His Ala Lys Asp Cys Asn
 1810 1815 1820
 Val Lys Leu Pro Phe Phe Val Arg Ser Val Ala Thr Phe Ile Met Gln
 1825 1830 1835 1840
 Gly Ser Lys Leu Ser Gly Ser Glu Cys Tyr Ile Leu Leu Thr Leu Gly
 1845 1850 1855
 His His Asn Ser Leu Pro Cys His Gly Glu Ile Gln Asn Ser Lys Met
 1860 1865 1870
 Lys Ile Ala Val Cys Asn Asp Phe Tyr Ala Ala Lys Lys Leu Asp Asn
 1875 1880 1885
 Lys Ser Ile Glu Ala Asn Cys Lys Ser Leu Leu Ser Gly Leu Arg Ile
 1890 1895 1900
 Pro Ile Asn Lys Lys Glu Leu Asp Arg Gln Arg Arg Leu Leu Thr Leu
 1905 1910 1915 1920
 Gln Ser Asn His Ser Ser Val Ala Thr Val Gly Gly Ser Lys Ile Ile
 1925 1930 1935
 Glu Ser Lys Trp Leu Thr Asn Lys Ala Ser Thr Ile Ile Asp Trp Leu
 1940 1945 1950
 Glu His Ile Leu Asn Ser Pro Lys Gly Glu Leu Asn Tyr Asp Phe Phe
 1955 1960 1965
 Glu Ala Leu Glu Asn Thr Tyr Pro Asn Met Ile Lys Leu Ile Asp Asn
 1970 1975 1980
 Leu Gly Asn Ala Glu Ile Lys Lys Leu Ile Lys Val Thr Gly Tyr Met
 1985 1990 1995 2000
 Leu Val Ser Lys Lys
 2005

<210> 332
 <211> 2005
 <212> PRT
 <213> human metapneumo virus

<400> 332
 Met Asp Pro Phe Cys Glu Ser Thr Val Asn Val Tyr Leu Pro Asp Ser
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 Tyr Leu Lys Gly Val Ile Ser Phe Ser Glu Thr Asn Ala Ile Gly Ser

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Cys	Leu	Leu	Lys	Arg	Pro	Tyr	Leu	Lys	Asn	Asp	Asn	Thr	Ala	Lys	Val
							35	40					45		
Ala	Val	Glu	Asn	Pro	Val	Val	Glu	His	Val	Arg	Leu	Arg	Asn	Ala	Val
							50	55			60				
Met	Thr	Lys	Met	Lys	Ile	Ser	Asp	Tyr	Lys	Val	Val	Glu	Pro	Val	Asn
							65	70		75			80		
Met	Gln	His	Glu	Ile	Met	Lys	Asn	Ile	His	Ser	Cys	Glu	Leu	Thr	Leu
							85		90				95		
Leu	Lys	Gln	Phe	Leu	Thr	Arg	Ser	Lys	Asn	Ile	Ser	Ser	Leu	Lys	Leu
							100		105				110		
Asn	Met	Ile	Cys	Asp	Trp	Leu	Gln	Leu	Lys	Ser	Thr	Ser	Asp	Asn	Thr
							115		120			125			
Ser	Ile	Leu	Asn	Phe	Ile	Asp	Val	Glu	Phe	Ile	Pro	Val	Trp	Val	Ser
							130		135			140			
Asn	Trp	Phe	Ser	Asn	Trp	Tyr	Asn	Leu	Asn	Lys	Leu	Ile	Leu	Glu	Phe
							145		150			155			160
Arg	Arg	Glu	Glu	Val	Ile	Arg	Thr	Gly	Ser	Ile	Leu	Cys	Arg	Ser	Leu
							165			170				175	
Gly	Lys	Leu	Val	Phe	Ile	Val	Ser	Ser	Tyr	Gly	Cys	Val	Val	Lys	Ser
							180		185			190			
Asn	Lys	Ser	Lys	Arg	Val	Ser	Phe	Phe	Thr	Tyr	Asn	Gln	Leu	Leu	Thr
							195		200			205			
Trp	Lys	Asp	Val	Met	Leu	Ser	Arg	Phe	Asn	Ala	Asn	Phe	Cys	Ile	Trp
							210		215			220			
Val	Ser	Asn	Asn	Leu	Asn	Lys	Asn	Gln	Glu	Gly	Leu	Gly	Leu	Arg	Ser
							225		230			235			240
Asn	Leu	Gln	Gly	Met	Leu	Thr	Asn	Lys	Leu	Tyr	Glu	Thr	Val	Asp	Tyr
							245			250			255		
Met	Leu	Ser	Leu	Cys	Cys	Asn	Glu	Gly	Phe	Ser	Leu	Val	Lys	Glu	Phe
							260		265			270			
Glu	Gly	Phe	Ile	Met	Ser	Glu	Ile	Leu	Lys	Ile	Thr	Glu	His	Ala	Gln
							275		280			285			
Phe	Ser	Thr	Arg	Phe	Arg	Asn	Thr	Leu	Leu	Asn	Gly	Leu	Thr	Glu	Gln
							290		295			300			
Leu	Ser	Val	Leu	Lys	Ala	Lys	Asn	Arg	Ser	Arg	Val	Leu	Gly	Thr	Ile
							305		310			315			320
Leu	Glu	Asn	Asn	Asn	Tyr	Pro	Met	Tyr	Glu	Val	Val	Leu	Lys	Leu	Leu
							325			330			335		
Gly	Asp	Thr	Leu	Lys	Ser	Ile	Lys	Leu	Ile	Asn	Lys	Asn	Leu	Glu	
							340		345			350			
Asn	Ala	Ala	Glu	Leu	Tyr	Tyr	Ile	Phe	Arg	Ile	Phe	Gly	His	Pro	Met
							355		360			365			
Val	Asp	Glu	Arg	Glu	Ala	Met	Asp	Ala	Val	Lys	Leu	Asn	Asn	Glu	Ile
							370		375			380			
Thr	Lys	Ile	Leu	Lys	Leu	Glu	Ser	Leu	Thr	Glu	Leu	Arg	Gly	Ala	Phe
							385		390			395			400
Ile	Leu	Arg	Ile	Ile	Lys	Gly	Phe	Val	Asp	Asn	Asn	Lys	Arg	Trp	Pro
							405			410			415		
Lys	Ile	Lys	Asn	Leu	Lys	Val	Leu	Ser	Lys	Arg	Trp	Ala	Met	Tyr	Phe
							420		425			430			
Lys	Ala	Lys	Ser	Tyr	Pro	Ser	Gln	Leu	Glu	Leu	Ser	Val	Gln	Asp	Phe
							435		440			445			
Leu	Glu	Leu	Ala	Ala	Val	Gln	Phe	Glu	Gln	Glu	Phe	Ser	Val	Pro	Glu
							450		455			460			
Lys	Thr	Asn	Leu	Glu	Met	Val	Leu	Asn	Asp	Lys	Ala	Ile	Ser	Pro	Pro
							465		470			475			480
Lys	Lys	Leu	Ile	Trp	Ser	Val	Tyr	Pro	Lys	Asn	Tyr	Leu	Pro	Glu	Thr
							485			490			495		
Ile	Lys	Asn	Gln	Tyr	Leu	Glu	Glu	Ala	Phe	Asn	Ala	Ser	Asp	Ser	Gln
							500			505			510		

Arg Thr Arg Arg Val Leu Glu Phe Tyr Leu Lys Asp Cys Lys Phe Asp
 515 520 525
 Gln Lys Glu Leu Lys Arg Tyr Val Ile Lys Gln Glu Tyr Leu Asn Asp
 530 535 540
 Lys Asp His Ile Val Ser Leu Thr Gly Lys Glu Arg Glu Leu Ser Val
 545 550 555 560
 Gly Arg Met Phe Ala Met Gln Pro Gly Lys Gln Arg Gln Ile Gln Ile
 565 570 575
 Leu Ala Glu Lys Leu Leu Ala Asp Asn Ile Val Pro Phe Phe Pro Glu
 580 585 590
 Thr Leu Thr Lys Tyr Gly Asp Leu Asp Leu Gln Arg Ile Met Glu Ile
 595 600 605
 Lys Ser Glu Leu Ser Ser Ile Lys Thr Arg Lys Asn Asp Ser Tyr Asn
 610 615 620
 Asn Tyr Ile Ala Arg Ala Ser Ile Val Thr Asp Leu Ser Lys Phe Asn
 625 630 635 640
 Gln Ala Phe Arg Tyr Glu Thr Thr Ala Ile Cys Ala Asp Val Ala Asp
 645 650 655
 Glu Leu His Gly Thr Gln Ser Leu Phe Cys Trp Leu His Leu Ile Val
 660 665 670
 Pro Met Thr Thr Met Ile Cys Ala Tyr Arg His Ala Pro Pro Glu Thr
 675 680 685
 Lys Gly Glu Tyr Asp Ile Asp Lys Ile Gln Glu Gln Ser Gly Leu Tyr
 690 695 700
 Arg Tyr His Met Gly Gly Ile Glu Gly Trp Cys Gln Lys Leu Trp Thr
 705 710 715 720
 Met Glu Ala Ile Ser Leu Leu Asp Val Val Ser Val Lys Thr Arg Cys
 725 730 735
 Gln Met Thr Ser Leu Leu Asn Gly Asp Asn Gln Ser Ile Asp Val Ser
 740 745 750
 Lys Pro Val Lys Leu Ser Glu Gly Ile Asp Glu Val Lys Ala Asp Tyr
 755 760 765
 Ser Leu Ala Ile Arg Met Leu Lys Glu Ile Arg Asp Ala Tyr Lys Asn
 770 775 780
 Ile Gly His Lys Leu Lys Glu Gly Glu Thr Tyr Ile Ser Arg Asp Leu
 785 790 795 800
 Gln Phe Ile Ser Lys Val Ile Gln Ser Glu Gly Val Met His Pro Thr
 805 810 815
 Pro Ile Lys Ile Leu Arg Val Gly Pro Trp Ile Asn Thr Ile Leu
 820 825 830
 Asp Asp Ile Lys Thr Ser Ala Glu Ser Ile Gly Ser Leu Cys Gln Glu
 835 840 845
 Leu Glu Phe Arg Gly Glu Ser Ile Leu Val Ser Leu Ile Leu Arg Asn
 850 855 860
 Phe Trp Leu Tyr Asn Leu Tyr Met Tyr Glu Ser Lys Gln His Pro Leu
 865 870 875 880
 Ala Gly Lys Gln Leu Phe Lys Gln Leu Asn Lys Thr Leu Thr Ser Val
 885 890 895
 Gln Arg Phe Phe Glu Leu Lys Lys Glu Asn Asp Val Val Asp Leu Trp
 900 905 910
 Met Asn Ile Pro Met Gln Phe Gly Gly Asp Pro Val Val Phe Tyr
 915 920 925
 Arg Ser Phe Tyr Arg Arg Thr Pro Asp Phe Leu Thr Glu Ala Ile Ser
 930 935 940
 His Val Asp Leu Leu Leu Lys Val Ser Asn Asn Ile Lys Asp Glu Thr
 945 950 955 960
 Lys Ile Arg Phe Phe Lys Ala Leu Leu Ser Ile Glu Lys Asn Glu Arg
 965 970 975
 Ala Thr Leu Thr Thr Leu Met Arg Asp Pro Gln Ala Val Gly Ser Glu
 980 985 990
 Arg Gln Ala Lys Val Thr Ser Asp Ile Asn Arg Thr Ala Val Thr Ser

995	1000	1005	
Ile Leu Ser Leu Ser Pro Asn Gln Leu Phe Cys Asp Ser Ala Ile His			
1010	1015	1020	
Tyr Ser Arg Asn Glu Glu Glu Val Gly Ile Ile Ala Asp Asn Ile Thr			
1025	1030	1035	1040
Pro Val Tyr Pro His Gly Leu Arg Val Leu Tyr Glu Ser Leu Pro Phe			
1045	1050	1055	
His Lys Ala Glu Lys Val Val Asn Met Ile Ser Gly Thr Lys Ser Ile			
1060	1065	1070	
Thr Asn Leu Leu Gln Arg Thr Ser Ala Ile Asn Gly Glu Asp Ile Asp			
1075	1080	1085	
Arg Ala Val Ser Met Met Leu Glu Asn Leu Gly Leu Leu Ser Arg Ile			
1090	1095	1100	
Leu Ser Val Ile Ile Asn Ser Ile Glu Ile Pro Ile Lys Ser Asn Gly			
1105	1110	1115	1120
Arg Leu Ile Cys Cys Gln Ile Ser Lys Thr Leu Arg Glu Lys Ser Trp			
1125	1130	1135	
Asn Asn Met Glu Ile Val Gly Val Thr Ser Pro Ser Ile Val Thr Cys			
1140	1145	1150	
Met Asp Val Val Tyr Ala Thr Ser Ser His Leu Lys Gly Ile Ile Ile			
1155	1160	1165	
Glu Lys Phe Ser Thr Asp Lys Thr Thr Arg Gly Gln Arg Gly Pro Lys			
1170	1175	1180	
Ser Pro Trp Val Gly Ser Ser Thr Gln Glu Lys Lys Leu Val Pro Val			
1185	1190	1195	1200
Tyr Asn Arg Gln Ile Leu Ser Lys Gln Gln Lys Glu Gln Leu Glu Ala			
1205	1210	1215	
Ile Gly Lys Met Arg Trp Val Tyr Lys Gly Thr Pro Gly Leu Arg Arg			
1220	1225	1230	
Leu Leu Asn Lys Ile Cys Ile Gly Ser Leu Gly Ile Ser Tyr Lys Cys			
1235	1240	1245	
Val Lys Pro Leu Leu Pro Arg Phe Met Ser Val Asn Phe Leu His Arg			
1250	1255	1260	
Leu Ser Val Ser Ser Arg Pro Met Glu Phe Pro Ala Ser Val Pro Ala			
1265	1270	1275	1280
Tyr Arg Thr Thr Asn Tyr His Phe Asp Thr Ser Pro Ile Asn Gln Ala			
1285	1290	1295	
Leu Ser Glu Arg Phe Gly Asn Glu Asp Ile Asn Leu Val Phe Gln Asn			
1300	1305	1310	
Ala Ile Ser Cys Gly Ile Ser Ile Met Ser Val Val Glu Gln Leu Thr			
1315	1320	1325	
Gly Arg Ser Pro Lys Gln Leu Val Leu Ile Pro Gln Leu Glu Ile			
1330	1335	1340	
Asp Ile Met Pro Pro Val Phe Gln Gly Lys Phe Asn Tyr Lys Leu			
1345	1350	1355	1360
Val Asp Lys Ile Thr Ser Asp Gln His Ile Phe Ser Pro Asp Lys Ile			
1365	1370	1375	
Asp Ile Leu Thr Leu Gly Lys Met Leu Met Pro Thr Ile Lys Gly Gln			
1380	1385	1390	
Lys Thr Asp Gln Phe Leu Asn Lys Arg Glu Asn Tyr Phe His Gly Asn			
1395	1400	1405	
Asn Leu Ile Glu Ser Leu Ser Ala Ala Leu Ala Cys His Trp Cys Gly			
1410	1415	1420	
Ile Leu Thr Glu Gln Cys Ile Glu Asn Asn Ile Phe Arg Lys Asp Trp			
1425	1430	1435	1440
Gly Asp Gly Phe Ile Ser Asp His Ala Phe Met Asp Phe Lys Val Phe			
1445	1450	1455	
Leu Cys Val Phe Lys Thr Lys Leu Leu Cys Ser Trp Gly Ser Gln Gly			
1460	1465	1470	
Lys Asn Val Lys Asp Glu Asp Ile Ile Asp Glu Ser Ile Asp Lys Leu			
1475	1480	1485	

Leu Arg Ile Asp Asn Thr Phe Trp Arg Met Phe Ser Lys Val Met Phe
 1490 1495 1500
 Glu Ser Lys Val Lys Lys Arg Ile Met Leu Tyr Asp Val Lys Phe Leu
 1505 1510 1515 1520
 Ser Leu Val Gly Tyr Ile Gly Phe Lys Asn Trp Phe Ile Glu Gln Leu
 1525 1530 1535
 Arg Val Val Glu Leu His Glu Val Pro Trp Ile Val Asn Ala Glu Gly
 1540 1545 1550
 Glu Leu Val Glu Ile Lys Ser Ile Lys Ile Tyr Leu Gln Leu Ile Glu
 1555 1560 1565
 Gln Ser Leu Ser Leu Arg Ile Thr Val Leu Asn Tyr Thr Asp Met Ala
 1570 1575 1580
 His Ala Leu Thr Arg Leu Ile Arg Lys Lys Leu Met Cys Asp Asn Ala
 1585 1590 1595 1600
 Leu Phe Asn Pro Ser Ser Ser Pro Met Phe Asn Leu Thr Gln Val Ile
 1605 1610 1615
 Asp Pro Thr Thr Gln Leu Asp Tyr Phe Pro Arg Ile Ile Phe Glu Arg
 1620 1625 1630
 Leu Lys Ser Tyr Asp Thr Ser Ser Asp Tyr Asn Lys Gly Lys Leu Thr
 1635 1640 1645
 Arg Asn Tyr Met Thr Leu Leu Pro Trp Gln His Val Asn Arg Tyr Asn
 1650 1655 1660
 Phe Val Phe Ser Ser Thr Gly Cys Lys Val Ser Leu Lys Thr Cys Ile
 1665 1670 1675 1680
 Gly Lys Leu Ile Lys Asp Leu Asn Pro Lys Val Leu Tyr Phe Ile Gly
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 Glu Gly Ala Gly Asn Trp Met Ala Arg Thr Ala Cys Glu Tyr Pro Asp
 1700 1705 1710
 Ile Lys Phe Val Tyr Arg Ser Leu Lys Asp Asp Leu Asp His His Tyr
 1715 1720 1725
 Pro Leu Glu Tyr Gln Arg Val Ile Gly Asp Leu Asn Arg Val Ile Asp
 1730 1735 1740
 Ser Gly Glu Gly Leu Ser Met Glu Thr Thr Asp Ala Thr Gln Lys Thr
 1745 1750 1755 1760
 His Trp Asp Leu Ile His Arg Ile Ser Lys Asp Ala Leu Leu Ile Thr
 1765 1770 1775
 Leu Cys Asp Ala Glu Phe Lys Asn Arg Asp Asp Phe Phe Lys Met Val
 1780 1785 1790
 Ile Leu Trp Arg Lys His Val Leu Ser Cys Arg Ile Cys Thr Ala Tyr
 1795 1800 1805
 Gly Thr Asp Leu Tyr Leu Phe Ala Lys Tyr His Ala Val Asp Cys Asn
 1810 1815 1820
 Ile Lys Leu Pro Phe Phe Val Arg Ser Val Ala Thr Phe Ile Met Gln
 1825 1830 1835 1840
 Gly Ser Lys Leu Ser Gly Ser Glu Cys Tyr Ile Leu Leu Thr Leu Gly
 1845 1850 1855
 His His Asn Asn Leu Pro Cys His Gly Glu Ile Gln Asn Ser Lys Met
 1860 1865 1870
 Arg Ile Ala Val Cys Asn Asp Phe Tyr Ala Ser Lys Lys Leu Asp Asn
 1875 1880 1885
 Lys Ser Ile Glu Ala Asn Cys Lys Ser Leu Leu Ser Gly Leu Arg Ile
 1890 1895 1900
 Pro Ile Asn Lys Lys Glu Leu Asn Arg Gln Lys Lys Leu Leu Thr Leu
 1905 1910 1915 1920
 Gln Ser Asn His Ser Ser Ile Ala Thr Val Gly Gly Ser Lys Ile Ile
 1925 1930 1935
 Glu Ser Lys Trp Leu Lys Asn Lys Ala Ser Thr Ile Ile Asp Trp Leu
 1940 1945 1950
 Glu His Ile Leu Asn Ser Pro Lys Gly Glu Leu Asn Tyr Asp Phe Phe
 1955 1960 1965
 Glu Ala Leu Glu Asn Thr Tyr Pro Asn Met Ile Lys Leu Ile Asp Asn

1970	1975	1980													
Leu	Gly	Asn	Ala	Glu	Ile	Lys	Lys	Leu	Ile	Lys	Val	Thr	Gly	Tyr	Met
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					2005										

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 35 40 45
 Ala Val Glu Asn Pro Val Val Glu His Val Arg Leu Arg Asn Ala Val
 50 55 60
 Met Thr Lys Met Lys Ile Ser Asp Tyr Lys Val Val Glu Pro Ile Asn
 65 70 75 80
 Met Gln His Glu Ile Met Lys Asn Ile His Ser Cys Glu Leu Thr Leu
 85 90 95
 Leu Lys Gln Phe Leu Thr Arg Ser Lys Asn Ile Ser Ser Leu Lys Leu
 100 105 110
 Ser Met Ile Cys Asp Trp Leu Gln Leu Lys Ser Thr Ser Asp Asn Thr
 115 120 125
 Ser Ile Leu Asn Phe Ile Asp Val Glu Phe Ile Pro Val Trp Val Ser
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 Asn Trp Phe Ser Asn Trp Tyr Asn Leu Asn Lys Leu Ile Leu Glu Phe
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 Gly Lys Leu Val Phe Ile Val Ser Ser Tyr Gly Cys Val Val Lys Ser
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 Asn Lys Ser Lys Arg Val Ser Phe Phe Thr Tyr Asn Gln Leu Leu Thr
 195 200 205
 Trp Lys Asp Val Met Leu Ser Arg Phe Asn Ala Asn Phe Cys Ile Trp
 210 215 220
 Val Ser Asn Asn Leu Asn Lys Asn Gln Glu Gly Leu Gly Phe Arg Ser
 225 230 235 240
 Asn Leu Gln Gly Met Leu Thr Asn Lys Leu Tyr Glu Thr Val Asp Tyr
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 260 265 270
 Glu Gly Phe Ile Met Ser Glu Ile Leu Lys Ile Thr Glu His Ala Gln
 275 280 285
 Phe Ser Thr Arg Phe Arg Asn Thr Leu Leu Asn Gly Leu Thr Glu Gln
 290 295 300
 Leu Ser Met Leu Lys Ala Lys Asn Arg Ser Arg Val Leu Gly Thr Ile
 305 310 315 320
 Leu Glu Asn Asn Asp Tyr Pro Met Tyr Glu Val Val Leu Lys Leu Leu
 325 330 335
 Gly Asp Thr Leu Lys Ser Ile Lys Leu Leu Ile Asn Lys Asn Leu Glu
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 Asn Ala Ala Glu Leu Tyr Tyr Ile Phe Arg Ile Phe Gly His Pro Met
 355 360 365
 Val Asp Glu Arg Glu Ala Met Asp Ala Val Lys Leu Asn Asn Glu Ile
 370 375 380

Thr Lys Ile Leu Lys Leu Glu Ser Leu Thr Glu Leu Arg Gly Ala Phe
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 Lys Ile Lys Asn Leu Lys Val Leu Ser Lys Arg Trp Val Met Tyr Phe
 420 425 430
 Lys Ala Lys Ser Tyr Pro Ser Gln Leu Glu Leu Ser Val Gln Asp Phe
 435 440 445
 Leu Glu Leu Ala Ala Val Gln Phe Glu Gln Glu Phe Ser Val Pro Glu
 450 455 460
 Lys Thr Asn Leu Glu Met Val Leu Asn Asp Lys Ala Ile Ser Pro Pro
 465 470 475 480
 Lys Lys Leu Ile Trp Ser Val Tyr Pro Lys Asn Tyr Leu Pro Glu Ile
 485 490 495
 Ile Lys Asn Gln Tyr Leu Glu Glu Val Phe Asn Ala Ser Asp Ser Gln
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 Arg Thr Arg Arg Val Leu Glu Phe Tyr Leu Lys Asp Cys Lys Phe Asp
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 Lys Asp His Ile Val Ser Leu Thr Gly Lys Glu Arg Glu Leu Ser Val
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 645 650 655
 Glu Leu His Gly Thr Gln Ser Leu Phe Cys Trp Leu His Leu Ile Val
 660 665 670
 Pro Met Thr Thr Met Ile Cys Ala Tyr Arg His Ala Pro Pro Glu Thr
 675 680 685
 Lys Gly Glu Tyr Asp Ile Asp Lys Ile Glu Glu Gln Ser Gly Leu Tyr
 690 695 700
 Arg Tyr His Met Gly Gly Ile Glu Gly Trp Cys Gln Lys Leu Trp Thr
 705 710 715 720
 Met Glu Ala Ile Ser Leu Leu Asp Val Val Ser Val Lys Thr Arg Cys
 725 730 735
 Gln Met Thr Ser Leu Leu Asn Gly Asp Asn Gln Ser Ile Asp Val Ser
 740 745 750
 Lys Pro Val Lys Leu Ser Glu Gly Ile Asp Glu Val Lys Ala Asp Tyr
 755 760 765
 Ser Leu Ala Ile Lys Met Leu Lys Glu Ile Arg Asp Ala Tyr Lys Asn
 770 775 780
 Ile Gly His Lys Leu Lys Glu Gly Glu Thr Tyr Ile Ser Arg Asp Leu
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 Gln Phe Ile Ser Lys Val Ile Gln Ser Glu Gly Val Met His Pro Thr
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 Pro Ile Lys Lys Ile Leu Arg Val Gly Pro Trp Ile Asn Thr Ile Leu
 820 825 830
 Asp Asp Ile Lys Thr Ser Ala Glu Ser Ile Gly Ser Leu Cys Gln Glu
 835 840 845
 Leu Glu Phe Arg Gly Glu Ser Met Leu Val Ser Leu Ile Leu Arg Asn
 850 855 860
 Phe Trp Leu Tyr Asn Leu Tyr Met His Glu Ser Lys Gln His Pro Leu

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Gln	Arg	Phe	Phe	Glu	Leu	Lys	Lys	Glu	Asn	Asp	Val	Val	Asp	Leu	Trp
900	905	910													
Met	Asn	Ile	Pro	Met	Gln	Phe	Gly	Gly	Gly	Asp	Pro	Val	Val	Phe	Tyr
915	920	925													
Arg	Ser	Phe	Tyr	Arg	Arg	Thr	Pro	Asp	Phe	Leu	Thr	Glu	Ala	Ile	Ser
930	935	940													
His	Val	Asp	Leu	Leu	Lys	Val	Ser	Asn	Asn	Ile	Lys	Asn	Glu	Thr	
945	950	955													
Lys	Ile	Arg	Phe	Phe	Lys	Ala	Leu	Leu	Ser	Ile	Glu	Lys	Asn	Glu	Arg
965	970	975													
Ala	Thr	Leu	Thr	Thr	Leu	Met	Arg	Asp	Pro	Gln	Ala	Val	Gly	Ser	Glu
980	985	990													
Arg	Gln	Ala	Lys	Val	Thr	Ser	Asp	Ile	Asn	Arg	Thr	Ala	Val	Thr	Ser
995	1000	1005													
Ile	Leu	Ser	Leu	Ser	Pro	Asn	Gln	Leu	Phe	Cys	Asp	Ser	Ala	Ile	His
1010	1015	1020													
Tyr	Ser	Arg	Asn	Glu	Glu	Glu	Val	Gly	Ile	Ile	Ala	Asp	Asn	Ile	Thr
1025	1030	1035													
Pro	Val	Tyr	Pro	His	Gly	Leu	Arg	Val	Leu	Tyr	Glu	Ser	Leu	Pro	Phe
1045	1050	1055													
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1060	1065	1070													
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1075	1080	1085													
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1125	1130	1135													
Asn	Asn	Met	Glu	Ile	Val	Gly	Val	Thr	Ser	Pro	Ser	Ile	Val	Thr	Cys
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Met	Asp	Val	Val	Tyr	Ala	Thr	Ser	Ser	His	Leu	Lys	Gly	Ile	Ile	Ile
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Glu	Lys	Phe	Ser	Thr	Asp	Lys	Thr	Thr	Arg	Gly	Gln	Arg	Gly	Pro	Lys
1170	1175	1180													
Ser	Pro	Trp	Val	Gly	Ser	Ser	Thr	Gln	Glu	Lys	Lys	Leu	Val	Pro	Val
1185	1190	1195													
Tyr	Asn	Arg	Gln	Ile	Leu	Ser	Lys	Gln	Gln	Lys	Glu	Gln	Leu	Glu	Ala
1205	1210	1215													
Ile	Gly	Lys	Met	Arg	Trp	Val	Tyr	Lys	Gly	Thr	Pro	Gly	Leu	Arg	Arg
1220	1225	1230													
Leu	Leu	Asn	Lys	Ile	Cys	Ile	Gly	Ser	Leu	Gly	Ile	Ser	Tyr	Lys	Cys
1235	1240	1245													
Val	Lys	Pro	Leu	Leu	Pro	Arg	Phe	Met	Ser	Val	Asn	Phe	Leu	His	Arg
1250	1255	1260													
Leu	Ser	Val	Ser	Ser	Arg	Pro	Met	Glu	Phe	Pro	Ala	Ser	Val	Pro	Ala
1265	1270	1275													
Tyr	Arg	Thr	Thr	Asn	Tyr	His	Phe	Asp	Thr	Ser	Pro	Ile	Asn	Gln	Ala
1285	1290	1295													
Leu	Ser	Glu	Arg	Phe	Gly	Asn	Glu	Asp	Ile	Asn	Leu	Val	Phe	Gln	Asn
1300	1305	1310													
Ala	Ile	Ser	Cys	Gly	Ile	Ser	Ile	Met	Ser	Val	Val	Glu	Gln	Leu	Thr
1315	1320	1325													
Gly	Arg	Ser	Pro	Lys	Gln	Leu	Val	Leu	Ile	Pro	Gln	Leu	Glu	Glu	Ile
1330	1335	1340													
Asp	Ile	Met	Pro	Pro	Pro	Val	Phe	Gln	Gly	Lys	Phe	Asn	Tyr	Lys	Leu
1345	1350	1355													
															1360

Val Asp Lys Ile Thr Ser Asp Gln His Ile Phe Ser Pro Asp Lys Ile
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 Asp Ile Leu Thr Leu Gly Lys Met Leu Met Pro Thr Ile Lys Gly Gln
 1380 1385 1390
 Lys Thr Asp Gln Phe Leu Asn Lys Arg Glu Asn Tyr Phe His Gly Asn
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 1425 1430 1435 1440
 Gly Asp Gly Phe Ile Ser Asp His Ala Phe Met Asp Phe Lys Ile Phe
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 1540 1545 1550
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 Gln Ser Leu Ser Leu Arg Ile Thr Val Leu Asn Tyr Thr Asp Met Ala
 1570 1575 1580
 His Ala Leu Thr Arg Leu Ile Arg Lys Lys Leu Met Cys Asp Asn Ala
 1585 1590 1595 1600
 Leu Phe Asn Pro Ser Ser Ser Pro Met Phe Ser Leu Thr Gln Val Ile
 1605 1610 1615
 Asp Pro Thr Thr Gln Leu Asp Tyr Phe Pro Lys Val Ile Phe Glu Arg
 1620 1625 1630
 Leu Lys Ser Tyr Asp Thr Ser Ser Asp Tyr Asn Lys Gly Lys Leu Thr
 1635 1640 1645
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 1650 1655 1660
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 1665 1670 1675 1680
 Gly Lys Leu Ile Lys Asp Leu Asn Pro Lys Val Leu Tyr Phe Ile Gly
 1685 1690 1695
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 1700 1705 1710
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 1715 1720 1725
 Pro Leu Glu Tyr Gln Arg Val Ile Gly Asp Leu Asn Arg Val Ile Asp
 1730 1735 1740
 Gly Gly Glu Gly Leu Ser Met Glu Thr Thr Asp Ala Thr Gln Lys Thr
 1745 1750 1755 1760
 His Trp Asp Leu Ile His Arg Ile Ser Lys Asp Ala Leu Leu Ile Thr
 1765 1770 1775
 Leu Cys Asp Ala Glu Phe Lys Asn Arg Asp Asp Phe Phe Lys Met Val
 1780 1785 1790
 Ile Leu Trp Arg Lys His Val Leu Ser Cys Arg Ile Cys Thr Ala Tyr
 1795 1800 1805
 Gly Thr Asp Leu Tyr Leu Phe Ala Lys Tyr His Ala Thr Asp Cys Asn
 1810 1815 1820
 Ile Lys Leu Pro Phe Phe Val Arg Ser Val Ala Thr Phe Ile Met Gln
 1825 1830 1835 1840
 Gly Ser Lys Leu Ser Gly Ser Glu Cys Tyr Ile Leu Leu Thr Leu Gly

	1845	1850	1855
His His Asn Asn Leu Pro Cys His Gly Glu Ile Gln Asn Ser Lys Met			
1860	1865	1870	
Arg Ile Ala Val Cys Asn Asp Phe His Ala Ser Lys Lys Leu Asp Asn			
1875	1880	1885	
Lys Ser Ile Glu Ala Asn Cys Lys Ser Leu Leu Ser Gly Leu Arg Ile			
1890	1895	1900	
Pro Ile Asn Lys Lys Glu Leu Asn Arg Gln Lys Lys Leu Leu Thr Leu			
1905	1910	1915	1920
Gln Ser Asn His Ser Ser Ile Ala Thr Val Gly Gly Ser Lys Ile Ile			
1925	1930	1935	
Glu Ser Lys Trp Leu Lys Asn Lys Ala Ser Thr Ile Ile Asp Trp Leu			
1940	1945	1950	
Glu His Ile Leu Asn Ser Pro Lys Gly Glu Leu Asn Tyr Asp Phe Phe			
1955	1960	1965	
Glu Ala Leu Glu Asn Thr Tyr Pro Asn Met Ile Lys Leu Ile Asp Asn			
1970	1975	1980	
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catgcctcaa	aaaaactaga	caacaaatca	attgaagcta	actgtaaatc	tcttctatca	5700
ggattaagaa	taccaataaa	caaaaaagag	ttaaatagac	aaaagaaaact	gttaacacta	5760
caaagcaatc	attcttccat	agcaacagtt	ggcggcagta	agattataga	atccaaatgg	5820
ttaaaagaata	aagcaagttac	aataattgtat	tggttagagc	atatcttga	ttctccaaaa	5880
ggtgaattaa	actatgattt	ctttaagca	ttagagaaca	cataccccaa	tatgtcaag	5940
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cttgcgtgat	agaagttaa					6018

<210> 338
<211> 187
<212> PRT
<213> human metapneumo virus

<400> 338
 Met Ser Arg Lys Ala Pro Cys Lys Tyr Glu Val Arg Gly Lys Cys Asn
 1 5 10 15
 Arg Gly Ser Glu Cys Lys Phe Asn His Asn Tyr Trp Ser Trp Pro Asp
 20 25 30
 Arg Tyr Leu Leu Ile Arg Ser Asn Tyr Leu Leu Asn Gln Leu Leu Arg
 35 40 45
 Asn Thr Asp Arg Ala Asp Gly Leu Ser Ile Ile Ser Gly Ala Gly Arg
 50 55 60
 Glu Asp Arg Thr Gln Asp Phe Val Leu Gly Ser Thr Asn Val Val Gln
 65 70 75 80
 Gly Tyr Ile Asp Asp Asn Gln Ser Ile Thr Lys Ala Ala Ala Cys Tyr
 85 90 95
 Ser Leu His Asn Ile Ile Lys Gln Leu Gln Glu Val Glu Val Arg Gln
 100 105 110
 Ala Arg Asp Asn Lys Leu Ser Asp Ser Lys His Val Ala Leu His Asn
 115 120 125
 Leu Val Leu Ser Tyr Met Glu Met Ser Lys Thr Pro Ala Ser Leu Ile
 130 135 140
 Asn Asn Leu Lys Arg Leu Pro Arg Glu Lys Leu Lys Lys Leu Ala Lys

145	150	155	160
Leu Ile Ile Asp Leu Ser Ala Gly Ala Glu Asn Asp Ser Ser Tyr Ala			
165	170		175
Leu Gln Asp Ser Glu Ser Thr Asn Gln Val Gln			
180	185		

<210> 339
 <211> 187
 <212> PRT
 <213> human metapneumo virus

<400> 339			
Met Ser Arg Lys Ala Pro Cys Lys Tyr Glu Val Arg Gly Lys Cys Asn			
1	5	10	15
Arg Gly Ser Glu Cys Lys Phe Asn His Asn Tyr Trp Ser Trp Pro Asp			
20	25	30	
Arg Tyr Leu Leu Ile Arg Ser Asn Tyr Leu Leu Asn Gln Leu Leu Arg			
35	40	45	
Asn Thr Asp Arg Ala Asp Gly Leu Ser Ile Ile Ser Gly Ala Gly Arg			
50	55	60	
Glu Asp Arg Thr Gln Asp Phe Val Leu Gly Ser Thr Asn Val Val Gln			
65	70	75	80
Gly Tyr Ile Asp Asp Asn Gln Ser Ile Thr Lys Ala Ala Ala Cys Tyr			
85	90	95	
Ser Leu His Asn Ile Ile Lys Gln Leu Gln Glu Val Glu Val Arg Gln			
100	105	110	
Ala Arg Asp Ser Lys Leu Ser Asp Ser Lys His Val Ala Leu His Asn			
115	120	125	
Leu Ile Leu Ser Tyr Met Glu Met Ser Lys Thr Pro Ala Ser Leu Ile			
130	135	140	
Asn Asn Leu Lys Arg Leu Pro Arg Glu Lys Leu Lys Lys Leu Ala Lys			
145	150	155	160
Leu Ile Ile Asp Leu Ser Ala Gly Ala Asp Asn Asp Ser Ser Tyr Ala			
165	170	175	
Leu Gln Asp Ser Glu Ser Thr Asn Gln Val Gln			
180	185		

<210> 340
 <211> 187
 <212> PRT
 <213> human metapneumo virus

<400> 340			
Met Ser Arg Lys Ala Pro Cys Lys Tyr Glu Val Arg Gly Lys Cys Asn			
1	5	10	15
Arg Gly Ser Asp Cys Lys Phe Asn His Asn Tyr Trp Ser Trp Pro Asp			
20	25	30	
Arg Tyr Leu Leu Leu Arg Ser Asn Tyr Leu Leu Asn Gln Leu Leu Arg			
35	40	45	
Asn Thr Asp Lys Ala Asp Gly Leu Ser Ile Ile Ser Gly Ala Gly Arg			
50	55	60	
Glu Asp Arg Thr Gln Asp Phe Val Leu Gly Ser Thr Asn Val Val Gln			
65	70	75	80
Gly Tyr Ile Asp Asp Asn Gln Gly Ile Thr Lys Ala Ala Ala Cys Tyr			
85	90	95	
Ser Leu His Asn Ile Ile Lys Gln Leu Gln Glu Thr Glu Val Arg Gln			
100	105	110	
Ala Arg Asp Asn Lys Leu Ser Asp Ser Lys His Val Ala Leu His Asn			
115	120	125	

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Leu Ile Leu Ser Tyr Met Glu Met Ser Lys Thr Pro Ala Ser Leu Ile
130          135          140
Asn Asn Leu Lys Lys Leu Pro Arg Glu Lys Leu Lys Lys Leu Ala Arg
145          150          155          160
Leu Ile Ile Asp Leu Ser Ala Gly Thr Asp Asn Asp Ser Ser Tyr Ala
165          170          175
Leu Gln Asp Ser Glu Ser Thr Asn Gln Val Gln
180          185

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<210> 341
<211> 187
<212> PRT
<213> human metapneumo virus

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<400> 341
Met Ser Arg Lys Ala Pro Cys Lys Tyr Glu Val Arg Gly Lys Cys Asn
1 5 10 15
Arg Gly Ser Glu Cys Lys Phe Asn His Asn Tyr Trp Ser Trp Pro Asp
20 25 30
Arg Tyr Leu Leu Leu Arg Ser Asn Tyr Leu Leu Asn Gln Leu Leu Arg
35 40 45
Asn Thr Asp Lys Ala Asp Gly Leu Ser Ile Ile Ser Gly Ala Gly Arg
50 55 60
Glu Asp Arg Thr Gln Asp Phe Val Leu Gly Ser Thr Asn Val Val Gln
65 70 75 80
Gly Tyr Ile Asp Asn Asn Gln Gly Ile Thr Lys Ala Ala Ala Cys Tyr
85 90 95
Ser Leu His Asn Ile Ile Lys Gln Leu Gln Glu Ile Glu Val Arg Gln
100 105 110
Ala Arg Asp Asn Lys Leu Ser Asp Ser Lys His Val Ala Leu His Asn
115 120 125
Leu Ile Leu Ser Tyr Met Glu Met Ser Lys Thr Pro Ala Ser Leu Ile
130 135 140
Asn Asn Leu Lys Lys Leu Pro Arg Glu Lys Leu Lys Lys Leu Ala Lys
145 150 155 160
Leu Ile Ile Asp Leu Ser Ala Gly Thr Asp Asn Asp Ser Ser Tyr Ala
165 170 175
Leu Gln Asp Ser Glu Ser Thr Asn Gln Val Gln
180 185

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<210> 342
<211> 564
<212> DNA
<213> human metapneumo virus

<400> 342
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tgcaagttt accacaatta ctggagttgg ccagatagat acttattaaat aagatcaaat 120
tatttattaa atcaactttt aaggaacact gatagagctg atggcttatac aataatatca 180
ggagcaggca gagaagatag gacacaagat tttgtcctag gttccaccaa tgggttcaa 240
ggtttatattg atgataacca aagcataaca aaagctgcag cctgttacag tctacataat 300
ataatcaaac aactacaaga agttgaagtt aggcaggcta gagataacaa actatctgac 360
agcaaacatg tagcacttca caacttagtc ctatcttata tggagatgag caaaaactcct 420
gcatcttaa tcaacaatct caagagactg ccgagagaga aactgaaaaaa attagcaaag 480
ctcataattg acttatacgc aggtgctgaa aatgacttta catatgcctt gcaagacagt 540
gaaagcacta atcaagtgcg gtga 564

<210> 343
<211> 564

<212> DNA

<213> human metapneumo virus

<400> 343

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tgtaagttt accacaatta ctggagttgg ccagatagat atttataat aagatcaa 120
tatctattaa atcagcttt aaggaacact gatagagctg atggctatc aataatatca 180
ggcgcaggca gagaagacag aacgcaagat ttgttctag gttccaccaa tgtggttcaa 240
ggttatattg atgataacca aagcataaca aaagctgcag cctgtacag tctacacaac 300
ataatcaagc aactacaaga agttgaagtt aggcaggcta gagatagcaa actatctgac 360
agcaagcatg tggcactcca taacttaatc ttatcttaca tggagatgag caaaactccc 420
gcatcttaa tcaacaatct taaaagactg ccgagagaaaa aactgaaaaa attagcaaag 480
ctgataattg acttatacgc aggcgcgtac aatgactctt catatgcctt gcaagacagt 540
gaaagacta atcaagtgcgt 564

<210> 344

<211> 564

<212> DNA

<213> human metapneumo virus

<400> 344

atgtctcgta aggctccatg caaatatgaa gtgcggggca aatgcaacag agggagtgtat 60
tgcaattca atcacaatta ctggagttgg cctgatagat atttattgtt aagatcaa 120
tatctcttaa atcagcttt aagaaacaca gataaggctg atggttgtc aataatatca 180
ggagcaggta gagaagatag aactcaagac ttgttcttg gttctactaa tgtggttcaa 240
gggtacattg atgacaacca aggaataacc aaggctgcag cttgctatag tctacacaac 300
ataatcaagc aactacaaga aacagaagta agacaggcta gagacaacaa gctttctgat 360
agcaaacatg tggcgtccca caacttgata ttatcctata tggagatgag caaaactcc 420
gcatctctaa tcaacaaccc aaagaacta ccaaggaaaa aactgaagaa attagcaaga 480
ttaataattg atttatacgc aggaactgac aatgactctt catatgcctt gcaagacagt 540
gaaagacta atcaagtgcgt 564

<210> 345

<211> 564

<212> DNA

<213> human metapneumo virus

<400> 345

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tgcaattca accacaatta ctggagctgg cctgataggt atttattgtt aagatcaa 120
tatctctga atcagcttt aagaaacact gataaggctg atggttgtc aataatatca 180
ggagcaggta gagaagatag gactcaagac ttgttcttg gttctactaa tgtggttcaa 240
gggtacattg ataacaatca aggaataaca aaggctgcag cttgctatag tctacataac 300
ataataaaac agctacaaga aatagaagta agacaggcta gagataataa gctttctgac 360
agcaaacatg tggcacttca caacttgata ttatcctata tggagatgag caaaactcc 420
gcatccctga ttaataaccc aaagaacta ccaaggaaaa aactgaagaa attagcgaaa 480
ttaataattg atttatacgc aggaactgat aatgactctt catatgcctt gcaagacagt 540
gaaagacta atcaagtgcgt 564

<210> 346

<211> 71

<212> PRT

<213> human metapneumo virus

<400> 346

Met	Thr	Leu	His	Met	Pro	Cys	Lys	Thr	Val	Lys	Ala	Leu	Ile	Lys	Cys
1				5				10					15		
Ser	Glu	His	Gly	Pro	Val	Phe	Ile	Thr	Ile	Glu	Val	Asp	Asp	Met	Ile
				20				25				30			
Trp	Thr	His	Lys	Asp	Leu	Lys	Glu	Ala	Leu	Ser	Asp	Gly	Ile	Val	Lys
				35				40			45				

Ser His Thr Asn Ile Tyr Asn Cys Tyr Leu Glu Asn Ile Glu Ile Ile
50 55 60
Tyr Val Lys Ala Tyr Leu Ser
65 70

<210> 347
<211> 71
<212> PRT
<213> human metapneumo virus

<400> 347
Met Thr Leu His Met Pro Cys Lys Thr Val Lys Ala Leu Ile Lys Cys
1 5 10 15
Ser Glu His Gly Pro Val Phe Ile Thr Ile Glu Val Asp Glu Met Ile
20 25 30
Trp Thr Gln Lys Glu Leu Lys Glu Ala Leu Ser Asp Gly Ile Val Lys
35 40 45
Ser His Thr Asn Ile Tyr Asn Cys Tyr Leu Glu Asn Ile Glu Ile Ile
50 55 60
Tyr Val Lys Ala Tyr Leu Ser
65 70

<210> 348
<211> 71
<212> PRT
<213> human metapneumo virus

<400> 348
Met Thr Leu His Met Pro Cys Lys Thr Val Lys Ala Leu Ile Lys Cys
1 5 10 15
Ser Lys His Gly Pro Lys Phe Ile Thr Ile Glu Ala Asp Asp Met Ile
20 25 30
Trp Thr His Lys Glu Leu Lys Glu Thr Leu Ser Asp Gly Ile Val Lys
35 40 45
Ser His Thr Asn Ile Tyr Ser Cys Tyr Leu Glu Asn Ile Glu Ile Ile
50 55 60
Tyr Val Lys Thr Tyr Leu Ser
65 70

<210> 349
<211> 71
<212> PRT
<213> human metapneumo virus

<400> 349
Met Thr Leu His Met Pro Cys Lys Thr Val Lys Ala Leu Ile Lys Cys
1 5 10 15
Ser Lys His Gly Pro Lys Phe Ile Thr Ile Glu Ala Asp Asp Met Ile
20 25 30
Trp Thr His Lys Glu Leu Lys Glu Thr Leu Ser Asp Gly Ile Val Lys
35 40 45
Ser His Thr Asn Ile Tyr Ser Cys Tyr Leu Glu Asn Ile Glu Ile Ile
50 55 60
Tyr Val Lys Ala Tyr Leu Ser
65 70

<210> 350

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<211> 216
<212> DNA
<213> human metapneumo virus

<400> 350
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ccagtttca ttactataga ggttcatgac atgatatggc ctcacaagga cttaaaagaa 120
gctttatctg atggatagt gaagtctcat actaacattt acaattgtta tttagaaaac 180
atagaaatta tatatgtcaa ggcttactta agttag 216

<210> 351
<211> 216
<212> DNA
<213> human metapneumo virus

<400> 351
atgactcttc atatgccttg caagacagtg aaagcactaa tcaagtgcag tgagcatggt 60
cctgtttca ttactataga ggttcatgaa atgatatggc ctcaaaaga attaaaagaa 120
gctttgtccg atggatagt gaagtctcac accaacattt acaattgtta tttagaaaac 180
atagaaatta tatatgtcaa ggcttactta agttag 216

<210> 352
<211> 216
<212> DNA
<213> human metapneumo virus

<400> 352
atgactcttc atatgccttg caagacagtg aaagcactaa tcaagtgcag taaacatggt 60
cccaaattca ttaccataga ggcagatgtatgat atgatatggc ctcacaaaga attaaaagaa 120
acactgtctg atggatagt aaaatcacac accaatattt atagttgtta cttagaaaat 180
atagaaataa tatatgttaa aacttactta agttag 216

<210> 353
<211> 216
<212> DNA
<213> human metapneumo virus

<400> 353
atgactcttc atatgccttg caagacagtg aaagcactaa tcaagtgcag taagcatggt 60
cccaaattca ttaccataga ggcagatgtatgat atgatatggc cacacaaaga attaaaggag 120
acactgtctg atggatagt aaaatcacac accaatattt acagttgtta tttagaaaat 180
atagaaataa tatatgttaa agcttactta agttag 216

<210> 354
<211> 727
<212> DNA
<213> human metapneumo virus

<400> 354
atgtctcgca aggctccgtg caaatatgaa gtgcggggca aatgcaatag aggaagttag 60
tgcaagtttta accacaatttta ctggagggtgg ccagatagat acttattttat aagatcaaat 120
tattttattaa atcaacttttta aaggaacact gatagagctg atggcttattc aataatatca 180
ggagcaggca gagaagatag gacacaagat tttgtcctag gttccaccaa tgggttcaa 240
ggttatatttggatgataacca aagcataaca aagactgcag cctgttacag tctacataat 300
ataatcaaac aactacaaga agttgaagtt aggcaggctt gagataacaa actatctgac 360
agcaaacatg tagcacttca caacttagtc ctatcttata tggagatgag caaaactcct 420
gcatctttaa tcaacaatcttca aagagactg ccgagagaga aactgaaaaa attagcaaaag 480
ctcataatttgcacttattcagc aggtgctgaa aatgactctt catatgcctt gcaagacagt 540
gaaagcacta atcaagtgcata gttgagcatgg tccagtttc attactatag aggttcatgaa 600
catgatatgg actcacaagg actttaaaaga agctttatctt gatggatagt tgaagtctca 660
tactaacatttacaatttgcacttattcagc aggtgctgaa aatgactctt catatgcctt gcaagacagt 720

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aagttag

727

<210> 355
<211> 727
<212> DNA
<213> human metapneumo virus

<400> 355
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tgtaagttt accacaatta ctggagttgg ccagatagat acttattaaat aagatcaaac 120
tatctttaa atcagcttt aaggaacact gataaggctg atggcttac aataatatca 180
ggcgcaggca gagaagacag aacgcaagat tttgttctag gttccaccaa tgtggttcaa 240
gggtatattg atgataacca agcataaca aaagctgcag cctgctacag tctacacaaac 300
ataatcaagc aactacaaga agttgaagtt aggcaggcta gagatagcaa actatctgac 360
agcaagcatg tggcaactcca taacttaatc ttatcttaca tggagatgag caaaactccc 420
gcatcttaa tcaacaatct taaaagactg ccgagagaaa aactgaaaaa attagcaaag 480
ctgataattg acttattcagc aggcgtgac aatgactctt catatgcctt gcaagacagt 540
gaaagcacta atcaagtgc a gtgagcatgg tccctgtttt attactatag aggttgatga 600
aatgatattg actcacaag aattaaaaga agctttgtcc gatggatag tgaagtctca 660
caccaacatt tacaattgtt atttagaaaa catagaaatt atatatgtca aggcttactt 720
aagttag 727

<210> 356
<211> 727
<212> DNA
<213> human metapneumo virus

<400> 356
atgtctcgta aggctccatg caaatatgaa gtgcggggca aatgcaacag agggagtgat 60
tgcaaatca atcacaatta ctggagttgg cctgatagat atttattgtt aagatcaaat 120
tatctcttaa atcagctttt aagaaacaca gataaggctg atggttgtc aataatatca 180
ggagcaggtt gagaagatag aactcaagac tttgttctt gttctactaa tgtggttcaa 240
gggtacattt atgacaacca aggaataacc aaggctgcag cttgctatag tctacacaaac 300
ataatcaagc aactacaaga aacagaagta agacaggcta gagacaacaa gctttctgat 360
agcaaacatg tggcgctcca caacttgata ttatcctata tggagatgag caaaactcct 420
gcatctctaa tcaacaacctt aaagaacta ccaaggggaaa aactgaagaa attagcaaga 480
ttaataattt attatcagc aggaactgac aatgactctt catatgcctt gcaagacagt 540
gaaagcacta atcaagtgc a gtaaacatgg tcccaaattt attaccatag aggcagatga 600
tatgatattg actcacaag aattaaaaga aacactgtct gatggatag taaaatcaca 660
caccaatatt tataattgtt atttagaaaa tatagaaata atatatgtt aacttactt 720
aagttag 727

<210> 357
<211> 727
<212> DNA
<213> human metapneumo virus

<400> 357
atgtctcgca aagctccatg caaatatgaa gtacggggca agtgcaacag gggaaagttag 60
tgcaattca accacaatta ctggagctgg cctgataggt atttattgtt aagatcaaat 120
tatctcttga atcagctttt aagaaacact gataaggctg atggttgtc aataatatca 180
ggagcaggtt gagaagatag gactcaagac tttgttctt gttctactaa tgtggttcaa 240
gggtacattt ataaacaatca aggaataaca aaggctgcag cttgctatag tctacataac 300
ataataaaac agctacaaga aatagaagta agacaggcta gagataataa gctttctgac 360
agcaaacatg tggcaacttca caacttgata ttatcctata tggagatgag caaaactcct 420
gcatccctga ttaataacctt aaagaacta ccaagagaaa aactgaagaa attagcgaaa 480
ttaataattt attatcagc aggaactgtt aatgactctt catatgcctt gcaagacagt 540
gaaagcacta atcaagtgc a gtaagcatgg tcccaaattt attaccatag aggcagatga 600
tatgatattg acacacaaag aattaaagga gacactgtct gatggatag taaaatcaca 660
caccaatatt tacagttgtt atttagaaaa tatagaaata atatatgtt aagcttactt 720
aagttag 727

<210> 358
<211> 254
<212> PRT
<213> human metapneumo virus

<400> 358
Met Glu Ser Tyr Leu Val Asp Thr Tyr Gln Gly Ile Pro Tyr Thr Ala
1 5 10 15
Ala Val Gln Val Asp Leu Ile Glu Lys Asp Leu Leu Pro Ala Ser Leu
20 25 30
Thr Ile Trp Phe Pro Leu Phe Gln Ala Asn Thr Pro Pro Ala Val Leu
35 40 45
Leu Asp Gln Leu Lys Thr Leu Thr Ile Thr Leu Tyr Ala Ala Ser
50 55 60
Gln Asn Gly Pro Ile Leu Lys Val Asn Ala Ser Ala Gln Gly Ala Ala
65 70 75 80
Met Ser Val Leu Pro Lys Lys Phe Glu Val Asn Ala Thr Val Ala Leu
85 90 95
Asp Glu Tyr Ser Lys Leu Glu Phe Asp Lys Leu Thr Val Cys Glu Val
100 105 110
Lys Thr Val Tyr Leu Thr Thr Met Lys Pro Tyr Gly Met Val Ser Lys
115 120 125
Phe Val Ser Ser Ala Lys Ser Val Gly Lys Lys Thr His Asp Leu Ile
130 135 140
Ala Leu Cys Asp Phe Met Asp Leu Glu Lys Asn Thr Pro Val Thr Ile
145 150 155 160
Pro Ala Phe Ile Lys Ser Val Ser Ile Lys Glu Ser Ala Thr
165 170 175
Val Glu Ala Ala Ile Ser Ser Glu Ala Asp Gln Ala Leu Thr Gln Ala
180 185 190
Lys Ile Ala Pro Tyr Ala Gly Leu Ile Met Ile Met Thr Met Asn Asn
195 200 205
Pro Lys Gly Ile Phe Lys Lys Leu Gly Ala Gly Thr Gln Val Ile Val
210 215 220
Glu Leu Gly Ala Tyr Val Gln Ala Glu Ser Ile Ser Lys Ile Cys Lys
225 230 235 240
Thr Trp Ser His Gln Gly Thr Arg Tyr Val Leu Lys Ser Arg
245 250

<210> 359
<211> 254
<212> PRT
<213> human metapneumo virus

<400> 359
Met Glu Ser Tyr Leu Val Asp Thr Tyr Gln Gly Ile Pro Tyr Thr Ala
1 5 10 15
Ala Val Gln Val Asp Leu Val Glu Lys Asp Leu Leu Pro Ala Ser Leu
20 25 30
Thr Ile Trp Phe Pro Leu Phe Gln Ala Asn Thr Pro Pro Ala Val Leu
35 40 45
Leu Asp Gln Leu Lys Thr Leu Thr Ile Thr Leu Tyr Ala Ala Ser
50 55 60
Gln Ser Gly Pro Ile Leu Lys Val Asn Ala Ser Ala Gln Gly Ala Ala
65 70 75 80
Met Ser Val Leu Pro Lys Lys Phe Glu Val Asn Ala Thr Val Ala Leu
85 90 95
Asp Glu Tyr Ser Lys Leu Glu Phe Asp Lys Leu Thr Val Cys Glu Val
100 105 110

Lys	Thr	Val	Tyr	Leu	Thr	Thr	Met	Lys	Pro	Tyr	Gly	Met	Val	Ser	Lys
115							120					125			
Phe	Val	Ser	Ser	Ala	Lys	Ser	Val	Gly	Lys	Lys	Thr	His	Asp	Leu	Ile
130							135					140			
Ala	Leu	Cys	Asp	Phe	Met	Asp	Leu	Glu	Lys	Asn	Thr	Pro	Val	Thr	Ile
145							150					155			160
Pro	Ala	Phe	Ile	Lys	Ser	Val	Ser	Ile	Lys	Glu	Ser	Glu	Ser	Ala	Thr
															175
Val	Glu	Ala	Ala	Ile	Ser	Ser	Glu	Ala	Asp	Gln	Ala	Leu	Thr	Gln	Ala
															180
Lys	Ile	Ala	Pro	Tyr	Ala	Gly	Leu	Ile	Met	Ile	Met	Thr	Met	Asn	Asn
195							200					205			
Pro	Lys	Gly	Ile	Phe	Lys	Lys	Leu	Gly	Ala	Gly	Thr	Gln	Val	Ile	Val
210							215					220			
Glu	Leu	Gly	Ala	Tyr	Val	Gln	Ala	Glu	Ser	Ile	Ser	Lys	Ile	Cys	Lys
225							230					235			240
Thr	Trp	Ser	His	Gln	Gly	Thr	Arg	Tyr	Val	Leu	Lys	Ser	Ser		
												245		250	

<210> 360
 <211> 254
 <212> PRT
 <213> human metapneumo virus

<400> 360															
Met	Glu	Ser	Tyr	Leu	Val	Asp	Thr	Tyr	Gln	Gly	Ile	Pro	Tyr	Thr	Ala
1							5					10			15
Ala	Val	Gln	Val	Asp	Leu	Val	Glu	Lys	Asp	Leu	Leu	Pro	Ala	Ser	Leu
							20					25			30
Thr	Ile	Trp	Phe	Pro	Leu	Phe	Gln	Ala	Asn	Thr	Pro	Pro	Ala	Val	Leu
							35					40			45
Leu	Asp	Gln	Leu	Lys	Thr	Leu	Thr	Ile	Thr	Thr	Leu	Tyr	Ala	Ala	Ser
							50					55			60
Gln	Asn	Gly	Pro	Ile	Leu	Lys	Val	Asn	Ala	Ser	Ala	Gln	Gly	Ala	Ala
65							70					75			80
Met	Ser	Val	Leu	Pro	Lys	Lys	Phe	Glu	Val	Asn	Ala	Thr	Val	Ala	Leu
							85					90			95
Asp	Glu	Tyr	Ser	Leu	Asp	Phe	Asp	Lys	Leu	Thr	Val	Cys	Asp	Val	
							100					105			110
Lys	Thr	Val	Tyr	Leu	Thr	Thr	Met	Lys	Pro	Tyr	Gly	Met	Val	Ser	Lys
							115					120			125
Phe	Val	Ser	Ser	Ala	Lys	Ser	Val	Gly	Lys	Lys	Thr	His	Asp	Leu	Ile
							130					135			140
Ala	Leu	Cys	Asp	Phe	Met	Asp	Leu	Glu	Lys	Asn	Ile	Pro	Val	Thr	Ile
145							150					155			160
Pro	Ala	Phe	Ile	Lys	Ser	Val	Ser	Ile	Lys	Glu	Ser	Glu	Ser	Ala	Thr
							165					170			175
Val	Glu	Ala	Ala	Ile	Ser	Ser	Glu	Ala	Asp	Gln	Ala	Leu	Thr	Gln	Ala
							180					185			190
Lys	Ile	Ala	Pro	Tyr	Ala	Gly	Leu	Ile	Met	Ile	Met	Thr	Met	Asn	Asn
195							195					200			205
Pro	Lys	Gly	Ile	Phe	Lys	Lys	Leu	Gly	Ala	Gly	Thr	Gln	Val	Ile	Val
210							210					215			220
Glu	Leu	Gly	Ala	Tyr	Val	Gln	Ala	Glu	Ser	Ile	Ser	Arg	Ile	Cys	Lys
225							225					230			235
Ser	Trp	Ser	His	Gln	Gly	Thr	Arg	Tyr	Val	Leu	Lys	Ser	Arg		
							245					250			

<210> 361

<211> 254
<212> PRT
<213> human metapneumo virus

<400> 361
Met Glu Ser Tyr Leu Val Asp Thr Tyr Gln Gly Ile Pro Tyr Thr Ala
1 5 10 15
Ala Val Gln Val Asp Leu Val Glu Lys Asp Leu Leu Pro Ala Ser Leu
20 25 30
Thr Ile Trp Phe Pro Leu Phe Gln Ala Asn Thr Pro Pro Ala Val Leu
35 40 45
Leu Asp Gln Leu Lys Thr Leu Thr Ile Thr Leu Tyr Ala Ala Ser
50 55 60
Gln Asn Gly Pro Ile Leu Lys Val Asn Ala Ser Ala Gln Gly Ala Ala
65 70 75 80
Met Ser Val Leu Pro Lys Lys Phe Glu Val Asn Ala Thr Val Ala Leu
85 90 95
Asp Glu Tyr Ser Lys Leu Asp Phe Asp Lys Leu Thr Val Cys Asp Val
100 105 110
Lys Thr Val Tyr Leu Thr Thr Met Lys Pro Tyr Gly Met Val Ser Lys
115 120 125
Phe Val Ser Ser Ala Lys Ser Val Gly Lys Lys Thr His Asp Leu Ile
130 135 140
Ala Leu Cys Asp Phe Met Asp Leu Glu Lys Asn Ile Pro Val Thr Ile
145 150 155 160
Pro Ala Phe Ile Lys Ser Val Ser Ile Lys Glu Ser Glu Ser Ala Thr
165 170 175
Val Glu Ala Ala Ile Ser Ser Glu Ala Asp Gln Ala Leu Thr Gln Ala
180 185 190
Lys Ile Ala Pro Tyr Ala Gly Leu Ile Met Ile Met Thr Met Asn Asn
195 200 205
Pro Lys Gly Ile Phe Lys Lys Leu Gly Ala Gly Thr Gln Val Ile Val
210 215 220
Glu Leu Gly Ala Tyr Val Gln Ala Glu Ser Ile Ser Arg Ile Cys Lys
225 230 235 240
Ser Trp Ser His Gln Gly Thr Arg Tyr Val Leu Lys Ser Arg
245 250

<210> 362
<211> 765
<212> DNA
<213> human metapneumo virus

<400> 362
atggaggcct acctagtaga cacctatcaa ggcattcctt acacagcagc tggcaagtt 60
gatctaata gaaaggaccc gttacctgca agcctaaca tatggttccc tttgtttcag 120
gccaacacac caccagcagt gctgctcgat cagctaaaaa ccctgacaat aaccactctg 180
tatgctgcat cacaaaatgg tccaataactc aaagtgaatg catcagccca aggtgcagca 240
atgtctgtac ttccaaaaaa atttgaagtc aatgcgactg tagcactcga tgaatatacg 300
aaactggaaat ttgacaaaact cacagtctgt gaagtaaaaaa cagtttactt aacaaccatg 360
aaaccatacg ggatggtatac aaaatttgc agctcagccca aatcagttgg caaaaaaaaca 420
catgatctaa tcgcactatg tgatttatg gatctagaaaa agaacacacc tggtaataata 480
ccagcatca tcaaatcgt ttcaatcaaa gagagtgagtt cagctactgt tgaagctgct 540
ataaggcgt aagcagacca agctctaaca caggccaaaa ttgcacccca tgcgggattta 600
attatgatca tgactatgaa caatccaaaa ggcatttca aaaagcttgg agctgggact 660
caagtcatag tagaacttagg agcatatgtc caggctgaaa gcataagcaa aatatgcaag 720
acttggagcc atcaaggac aagatatgtc ttgaagtcca gataa 765

<210> 363
<211> 765

<212> DNA
<213> human metapneumo virus

<400> 363

atggagtcct atctggtaga cacttatcaa ggcattccctt acacagcagc tggcaagtt 60
gatcttagtag aaaaggaccc gttacctgca agcctaaca tatggttccc cttgttttag 120
gccaatacac caccaggcgt tctgcttgat cagctaaaga ctctgactat aactactctg 180
tatgctgcat cacaatgtgg tccaaatacta aaagtgaatg catcagccca ggggcagca 240
atgtctgtac ttcccaaaaaa gtttgaagtc aatgcgactg tagcaattga cgaatatagc 300
aaatttagaat ttgacaaact tacagttctgt gaagttaaaaa cagtttactt aacaaccatg 360
aaaccatatg ggtatggatc aaagttgtg agctcgccca aatcagttgg caaaaaaaca 420
catgatctaa tcgcattatg tgatgtttag gatctagaaaa agaacacacc agttacaata 480
ccagcattta tcaaatactg ttctatcaag gagagtgaat cagccactgt tgaagctgca 540
ataaggcagtg aagcagacca agctctaaca caagccaaaa ttgcacccctt tgcgggactg 600
atcatgatta tgaccatgaa caatccaaaa ggcattattca agaagcttgg agctgggacc 660
caagtttag tagaacttagg agcatatgtc caggctgaaa gcataagtaa aatatgcaag 720
acttggagcc atcaaggaac aagatatgtc ctgaagtcctt gttaa 765

<210> 364

<211> 765

<212> DNA

<213> human metapneumo virus

<400> 364

atggagtcct atcttagtaga cacttatcaa ggcattccat atacagctgc tggcaagtt 60
gacctggtag aaaaagattt actgcacca agtttgacaa tatggttcc tttatttttag 120
gccaacacac caccaggcgt tctgcttgat cagctaaaaa ctttgacaat aacaactctg 180
tatgctgcat cacagaatgtgg tccaaatactc aaagttaatg catctgccc aggtgctgccc 240
atgtctgtac ttcccaaaaaa attcgaggta aatgcactgt tagcaattga tgaatacagt 300
aaactttagt ttgacaaagct gacggcttcgc gatgtttaaa cagtttattt gacaactatg 360
aaaccgtacg ggtatgggtgc aaaattttgtg agttcagccca aatcagttgg caaaaaagaca 420
catgatctaa ttgcactatg tgacttcatg gacctagaga aaaatatacc tggacaata 480
ccagcattta taaagtctgtt tcaatcaaa gagagtgaat cagccactgt tgaagctgca 540
ataaggcgcg aagccgacca agccttgaca caagccaaaa ttgcgcctt tgcaggacta 600
attatgatca tgaccatgaa caatccaaaa ggtatattca agaaacttagg ggctggaaaca 660
caagtttag tagagctggg ggcattatgtt caggctgaga gcatcagtag gatctgcaag 720
agctggagtc accaaggaac aagatacgtt cttttttttt gataaa 765

<210> 365

<211> 765

<212> DNA

<213> human metapneumo virus

<400> 365

atggagtcct atcttagtgaa cacttatcaa ggcattccctt acacagctgc tggcaagtt 60
gatctggtag aaaaagactt actaccagca agtttgacaa tatggttcc tctattccaa 120
gccaacacac caccaggcgtt tttgctcgat cagctaaaaa ctttgactat aacaactctg 180
tatgctgcat cacagaatgtgg tccaaatactc aaagttaatg catcagctca ggggtgctgct 240
atgtctgtac ttcccaaaaaa attcgaggta aatgcactgt tggcaattga tgaatacagc 300
aaactttagt ttgacaaagttt aacggtttcgc gatgtttaaa cagtttattt gacaaccatg 360
aagccatatg ggtatgggtgc aaaattttgtg agttcagccca aatcagttgg caaaaaagaca 420
catgatctaa ttgcactgtt tgacttcatg gacctagaga aaaatatacc tggacaata 480
ccagcattta taaagtctgtt tcaatcaaa gagagtggat cagccactgt tgaagctgca 540
ataaggcgtg agggccgacca agcattaaca caagccaaaa ttgcacccctt tgcaggacta 600
atcatgatca tgaccatgaa caatccaaaa ggtatattca agaaacttagg agctggaaaca 660
caagtttag tagagcttagg ggcattatgtt caagccgaga gcatcagcag gatctgcaag 720
agctggagtc accaaggaac aagatatgtt cttttttttt gataaa 765

<210> 366

<211> 394

<212> PRT

<213> human metapneumo virus

<400> 366
Met Ser Leu Gln Gly Ile His Leu Ser Asp Leu Ser Tyr Lys His Ala
1 5 10 15
Ile Leu Lys Glu Ser Gln Tyr Thr Ile Lys Arg Asp Val Gly Thr Thr
20 25 30
Thr Ala Val Thr Pro Ser Ser Leu Gln Gln Glu Ile Thr Leu Leu Cys
35 40 45
Gly Glu Ile Leu Tyr Ala Lys His Ala Asp Tyr Lys Tyr Ala Ala Glu
50 55 60
Ile Gly Ile Gln Tyr Ile Ser Thr Ala Leu Gly Ser Glu Arg Val Gln
65 70 75 80
Gln Ile Leu Arg Asn Ser Gly Ser Glu Val Gln Val Val Leu Thr Arg
85 90 95
Thr Tyr Ser Leu Gly Lys Ile Lys Asn Asn Lys Gly Glu Asp Leu Gln
100 105 110
Met Leu Asp Ile His Gly Val Glu Lys Ser Trp Val Glu Glu Ile Asp
115 120 125
Lys Glu Ala Arg Lys Thr Met Ala Thr Leu Leu Lys Glu Ser Ser Gly
130 135 140
Asn Ile Pro Gln Asn Gln Arg Pro Ser Ala Pro Asp Thr Pro Ile Ile
145 150 155 160
Leu Leu Cys Val Gly Ala Leu Ile Phe Thr Lys Leu Ala Ser Thr Ile
165 170 175
Glu Val Gly Leu Glu Thr Thr Val Arg Arg Ala Asn Arg Val Leu Ser
180 185 190
Asp Ala Leu Lys Arg Tyr Pro Arg Met Asp Ile Pro Lys Ile Ala Arg
195 200 205
Ser Phe Tyr Asp Leu Phe Glu Gln Lys Val Tyr His Arg Ser Leu Phe
210 215 220
Ile Glu Tyr Gly Lys Ala Leu Gly Ser Ser Ser Thr Gly Ser Lys Ala
225 230 235 240
Glu Ser Leu Phe Val Asn Ile Phe Met Gln Ala Tyr Gly Ala Gly Gln
245 250 255
Thr Met Leu Arg Trp Gly Val Ile Ala Arg Ser Ser Asn Asn Ile Met
260 265 270
Leu Gly His Val Ser Val Gln Ala Glu Leu Lys Gln Val Thr Glu Val
275 280 285
Tyr Asp Leu Val Arg Glu Met Gly Pro Glu Ser Gly Leu Leu His Leu
290 295 300
Arg Gln Ser Pro Lys Ala Gly Leu Leu Ser Leu Ala Asn Cys Pro Asn
305 310 315 320
Phe Ala Ser Val Val Gly Asn Ala Ser Gly Leu Gly Ile Ile Gly
325 330 335
Met Tyr Arg Gly Arg Val Pro Asn Thr Glu Leu Phe Ser Ala Ala Glu
340 345 350
Ser Tyr Ala Lys Ser Leu Lys Glu Ser Asn Lys Ile Asn Phe Ser Ser
355 360 365
Leu Gly Leu Thr Asp Glu Glu Lys Glu Ala Ala Glu His Phe Leu Asn
370 375 380
Val Ser Asp Asp Ser Gln Asn Asp Tyr Glu
385 390

<210> 367

<211> 394

<212> PRT

<213> human metapneumo virus

<400> 367

Met Ser Leu Gln Gly Ile His Leu Ser Asp Leu Ser Tyr Lys His Ala
 1 5 10 15
 Ile Leu Lys Glu Ser Gln Tyr Thr Ile Lys Arg Asp Val Gly Thr Thr
 20 25 30
 Thr Ala Val Thr Pro Ser Ser Leu Gln Gln Glu Ile Thr Leu Leu Cys
 35 40 45
 Gly Glu Ile Leu Tyr Ala Lys His Ala Asp Tyr Lys Tyr Ala Ala Glu
 50 55 60
 Ile Gly Ile Gln Tyr Ile Ser Thr Ala Leu Gly Ser Glu Arg Val Gln
 65 70 75 80
 Gln Ile Leu Arg Asn Ser Gly Ser Glu Val Gln Val Val Leu Thr Arg
 85 90 95
 Thr Tyr Ser Leu Gly Lys Val Lys Asn Asn Lys Gly Glu Asp Leu Gln
 100 105 110
 Met Leu Asp Ile His Gly Val Glu Lys Ser Trp Val Glu Glu Ile Asp
 115 120 125
 Lys Glu Ala Arg Lys Thr Met Ala Thr Leu Leu Lys Glu Ser Ser Gly
 130 135 140
 Asn Ile Pro Gln Asn Gln Arg Pro Ser Ala Pro Asp Thr Pro Ile Ile
 145 150 155 160
 Leu Leu Cys Val Gly Ala Leu Ile Phe Thr Lys Leu Ala Ser Thr Ile
 165 170 175
 Glu Val Gly Leu Glu Thr Thr Val Arg Arg Ala Asn Arg Val Leu Ser
 180 185 190
 Asp Ala Leu Lys Arg Tyr Pro Arg Met Asp Ile Pro Lys Ile Ala Arg
 195 200 205
 Ser Phe Tyr Asp Leu Phe Glu Gln Lys Val Tyr Tyr Arg Ser Leu Phe
 210 215 220
 Ile Glu Tyr Gly Lys Ala Leu Gly Ser Ser Ser Thr Gly Ser Lys Ala
 225 230 235 240
 Glu Ser Leu Phe Val Asn Ile Phe Met Gln Ala Tyr Gly Ala Gly Gln
 245 250 255
 Thr Met Leu Arg Trp Gly Val Ile Ala Arg Ser Ser Asn Asn Ile Met
 260 265 270
 Leu Gly His Val Ser Val Gln Ala Glu Leu Lys Gln Val Thr Glu Val
 275 280 285
 Tyr Asp Leu Val Arg Glu Met Gly Pro Glu Ser Gly Leu Leu His Leu
 290 295 300
 Arg Gln Ser Pro Lys Ala Gly Leu Leu Ser Leu Ala Asn Cys Pro Asn
 305 310 315 320
 Phe Ala Ser Val Val Leu Gly Asn Ala Ser Gly Leu Gly Ile Ile Gly
 325 330 335
 Met Tyr Arg Gly Arg Val Pro Asn Thr Glu Leu Phe Ser Ala Ala Glu
 340 345 350
 Ser Tyr Ala Lys Ser Leu Lys Glu Ser Asn Lys Ile Asn Phe Ser Ser
 355 360 365
 Leu Gly Leu Thr Asp Glu Glu Lys Glu Ala Ala Glu His Phe Leu Asn
 370 375 380
 Val Ser Asp Asp Ser Gln Asn Asp Tyr Glu
 385 390

<210> 368
 <211> 394
 <212> PRT
 <213> human metapneumo virus

<400> 368
 Met Ser Leu Gln Gly Ile His Leu Ser Asp Leu Ser Tyr Lys His Ala
 1 5 10 15
 Ile Leu Lys Glu Ser Gln Tyr Thr Ile Lys Arg Asp Val Gly Thr Thr

20	25	30
Thr Ala Val Thr Pro Ser Ser Leu Gln Gln Glu Ile Thr Leu Leu Cys		
35	40	45
Gly Glu Ile Leu Tyr Thr Lys His Thr Asp Tyr Lys Tyr Ala Ala Glu		
50	55	60
Ile Gly Ile Gln Tyr Ile Cys Thr Ala Leu Gly Ser Glu Arg Val Gln		
65	70	75
Gln Ile Leu Arg Asn Ser Gly Ser Glu Val Gln Val Val Leu Thr Lys		
85	90	95
Thr Tyr Ser Leu Gly Lys Gly Lys Asn Ser Lys Gly Glu Glu Leu Gln		
100	105	110
Met Leu Asp Ile His Gly Val Glu Lys Ser Trp Ile Glu Glu Ile Asp		
115	120	125
Lys Glu Ala Arg Lys Thr Met Val Thr Leu Leu Lys Glu Ser Ser Gly		
130	135	140
Asn Ile Pro Gln Asn Gln Arg Pro Ser Ala Pro Asp Thr Pro Ile Ile		
145	150	155
Leu Leu Cys Val Gly Ala Leu Ile Phe Thr Lys Leu Ala Ser Thr Ile		
165	170	175
Glu Val Gly Leu Glu Thr Thr Val Arg Arg Ala Asn Arg Val Leu Ser		
180	185	190
Asp Ala Leu Lys Arg Tyr Pro Arg Ile Asp Ile Pro Lys Ile Ala Arg		
195	200	205
Ser Phe Tyr Glu Leu Phe Glu Gln Lys Val Tyr Tyr Arg Ser Leu Phe		
210	215	220
Ile Glu Tyr Gly Lys Ala Leu Gly Ser Ser Ser Thr Gly Ser Lys Ala		
225	230	235
Glu Ser Leu Phe Val Asn Ile Phe Met Gln Ala Tyr Gly Ala Gly Gln		
245	250	255
Thr Leu Leu Arg Trp Gly Val Ile Ala Arg Ser Ser Asn Asn Ile Met		
260	265	270
Leu Gly His Val Ser Val Gln Ser Glu Leu Lys Gln Val Thr Glu Val		
275	280	285
Tyr Asp Leu Val Arg Glu Met Gly Pro Glu Ser Gly Leu Leu His Leu		
290	295	300
Arg Gln Ser Pro Lys Ala Gly Leu Leu Ser Leu Ala Asn Cys Pro Asn		
305	310	315
Phe Ala Ser Val Val Leu Gly Asn Ala Ser Gly Leu Gly Ile Ile Gly		
325	330	335
Met Tyr Arg Gly Arg Val Pro Asn Thr Glu Leu Phe Ser Ala Ala Glu		
340	345	350
Ser Tyr Ala Arg Ser Leu Lys Glu Ser Asn Lys Ile Asn Phe Ser Ser		
355	360	365
Leu Gly Leu Thr Asp Glu Glu Lys Glu Ala Ala Glu His Phe Leu Asn		
370	375	380
Met Ser Gly Asp Asn Gln Asn Asp Tyr Glu		
385	390	

<210> 369

<211> 394

<212> PRT

<213> human metapneumo virus

<400> 369

Met Ser Leu Gln Gly Ile His Leu Ser Asp Leu Ser Tyr Lys His Ala		
1	5	10
Ile Leu Lys Glu Ser Gln Tyr Thr Ile Lys Arg Asp Val Gly Thr Thr		
20	25	30
Thr Ala Val Thr Pro Ser Ser Leu Gln Gln Glu Ile Thr Leu Leu Cys		
35	40	45

Gly Glu Ile Leu Tyr Thr Lys His Thr Asp Tyr Lys Tyr Ala Ala Glu
 50 55 60
 Ile Gly Ile Gln Tyr Ile Cys Thr Ala Leu Gly Ser Glu Arg Val Gln
 65 70 75 80
 Gln Ile Leu Arg Asn Ser Gly Ser Glu Val Gln Val Val Leu Thr Lys
 85 90 95
 Thr Tyr Ser Leu Gly Lys Gly Lys Asn Ser Lys Gly Glu Glu Leu Gln
 100 105 110
 Met Leu Asp Ile His Gly Val Glu Lys Ser Trp Val Glu Glu Ile Asp
 115 120 125
 Lys Glu Ala Arg Lys Thr Met Val Thr Leu Leu Lys Glu Ser Ser Gly
 130 135 140
 Asn Ile Pro Gln Asn Gln Arg Pro Ser Ala Pro Asp Thr Pro Ile Ile
 145 150 155 160
 Leu Leu Cys Val Gly Ala Leu Ile Phe Thr Lys Leu Ala Ser Thr Ile
 165 170 175
 Glu Val Gly Leu Glu Thr Thr Val Arg Arg Ala Asn Arg Val Leu Ser
 180 185 190
 Asp Ala Leu Lys Arg Tyr Pro Arg Val Asp Ile Pro Lys Ile Ala Arg
 195 200 205
 Ser Phe Tyr Glu Leu Phe Glu Gln Lys Val Tyr Tyr Arg Ser Leu Phe
 210 215 220
 Ile Glu Tyr Gly Lys Ala Leu Gly Ser Ser Ser Thr Gly Ser Lys Ala
 225 230 235 240
 Glu Ser Leu Phe Val Asn Ile Phe Met Gln Ala Tyr Gly Ala Gly Gln
 245 250 255
 Thr Met Leu Arg Trp Gly Val Ile Ala Arg Ser Ser Asn Asn Ile Met
 260 265 270
 Leu Gly His Val Ser Val Gln Ala Glu Leu Lys Gln Val Thr Glu Val
 275 280 285
 Tyr Asp Leu Val Arg Glu Met Gly Pro Glu Ser Gly Leu Leu His Leu
 290 295 300
 Arg Gln Ser Pro Lys Ala Gly Leu Leu Ser Leu Ala Asn Cys Pro Asn
 305 310 315 320
 Phe Ala Ser Val Val Leu Gly Asn Ala Ser Gly Leu Gly Ile Ile Gly
 325 330 335
 Met Tyr Arg Gly Arg Val Pro Asn Thr Glu Leu Phe Ser Ala Ala Glu
 340 345 350
 Ser Tyr Ala Arg Ser Leu Lys Glu Ser Asn Lys Ile Asn Phe Ser Ser
 355 360 365
 Leu Gly Leu Thr Asp Glu Glu Lys Glu Ala Ala Glu His Phe Leu Asn
 370 375 380
 Met Ser Asp Asp Asn Gln Asp Asp Tyr Glu
 385 390

<210> 370
 <211> 1185
 <212> DNA
 <213> human metapneumo virus

<400> 370
 atgtctcttc aaggattca cctgagtgtat ttatcataca agcatgctat attaaaagag 60
 tctcagtagaca caataaaaag agatgtgggt acaacaactg cagtgacacc ctcatcattg 120
 caacaagaaa taacactgtt gtgtggagaa attctgtatg ctaaacatgc tgactacaaa 180
 tatgctgcag aaataggaat acaatatatt agcacagctt taggatcaga gagagtgcag 240
 cagattctga ggaactcagg cagtgaagtc caagtggctt taaccagaac gtactctctg 300
 gggaaaatta aaaacaataa aggagaagat ttacagatgt tagacataca cggggtagag 360
 aagagctggg tagaagagat agacaagaaa gcaaggaaaa caatggcaac cttgcttaag 420
 gaatcatcag gtaatatccc acaaaatcag aggcccctcag caccagacac acccataatc 480
 ttattatgtg taggtgcctt aatattcact aaactagcat caaccataga agtggacta 540

gagaccacag tcagaagggc taaccgtgta ctaagtgatg cactcaagag ataccctaga 600
atggacatac caaagattgc cagatcttc tatgacttat ttgaacaaaa agtgtatcac 660
agaagtttg tcattgagta tggcaaagca tttaggctcat catctacagg cagcaaagca 720
gaaagtctat ttgttaatat attcatgca gcttatgggg ccggtaaaac aatgctaagg 780
tgggggtca ttgccaggc atccaacaat ataatgttag gacatgtatc cgtccaagct 840
gagttaaaac aggtcacaga agtctatgac ttgggtcgag aaatggccc tgaatctgga 900
cttctacatt taaggcaag cccaaaagct ggactgttat cactagccaa ctgtcccaac 960
tttcaagtg ttgttctcg aaatgcctca ggcttaggca taatcggtat gtatcgaggg 1020
agagtaccaa acacagaatt atttcagca gctgaaagtt atgccaaaag tttgaaagaa 1080
agcaataaaa taaatttctc ttcatttagga cttacagatg aagagaaaaga ggctgcagaa 1140
catttcctaa atgtgagtga cgacagtc aaatgattatg agtaa 1185

<210> 371
<211> 1185
<212> DNA
<213> human metapneumo virus

<400> 371
atgtctttc aagggattca cctgagtgtat ctatcataca agcatgtat attaaaagag 60
tctcagtat caataaaagag agatgttaggc acaacaaccg cagtgacacc ctcatcatgg 120
caacaagaaa taacactatt gtgtggagaa attctatatg ctaagcatgc tgattacaaa 180
tatgctgcag aaataggaat acaatataatt agcacagctc taggatcaga gagagtacag 240
cagattctaa gaaactcagg tagtgaagtc caagtggtt taaccagaac gtactccttg 300
gggaaagttt aaaaacaacaa aggagaagat ttacagatgt tagacatatac cggagtagag 360
aaaagctggg tggaaagagat agacaaagaa gcaagaaaaaa caatggcaac tttgcttaaa 420
gaatcatcag gcaatattcc acaaaaatcag aggccttcag caccagacac acccataatc 480
ttattatgtg taggtgcctt aatatttacc aaacttagcat caactataga agtgggatata 540
gagaccacag tcagaagagc taaccgtgta ctaagtgtat cactaaaaag ataccctagg 600
atggacatac caaaaatcgc tagatcttc tatgacttat ttgaacaaaa agtgtattac 660
agaagtttg tcattgagta tggcaaaagca tttaggctcat cctctacagg cagcaaagca 720
gaaagtttat tcgttaatat attcatgca gcttacgggt ctggtaaaac aatgctgagg 780
tggggagtca ttgccaggc atctaacaat ataatgttag gacatgtatc tggtaagct 840
gagttaaaac aagtccacaga agtctatgac ctgggtcgag aaatggccc tgaatctggg 900
ctcctacatt taaggcaaaag cccaaaagct ggactgttat cactagccaa ttgtcccaac 960
tttgcttagt ttgttctcg caatgcctca ggcttaggca taataggtat gtatcgccgg 1020
agagtgcacaa acacagaact atttcagca gcaagaaagct atgccaaagag tttgaaagaa 1080
agcaataaaa ttaactttc ttcatttagga cttcacagatg aagaaaaaga ggctgcagaa 1140
cacttcctaa atgtgagtga cgacagtc aaatgattatg agtaa 1185

<210> 372
<211> 1185
<212> DNA
<213> human metapneumo virus

<400> 372
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caacaagaaa taacactttt gtgtggggaa atacttaca ctaaacacac tgattacaaa 180
tatgctgcgt agataggaat acaatataatt tgccacagctc taggatcaga aagagtacaa 240
cagattttga gaaactcagg tagtgaagtt caggtggttc taacccaaaac atactcctta 300
gggaaaggca aaaacagtaa aggggaagag ctgcagatgt tagatataca tggagtggaa 360
aagagttgga tagaagaaat agacaaagag gcaagaaaaga caatgtaac tttgcttaag 420
gaatcatcag gtaacatccc acaaaaaccag agaccttcag caccagacac accaataatt 480
ttattatgtg taggtgcctt aatatttact aaacttagcat caacaataga agttggatata 540
gagactacag ttagaagagc taatagagtg ctaagtgtat cactaaaaag ataccctagg 600
atagatatac caaagattgc tagatctttt tatgaactat ttgaacaaaa agtgtactac 660
agaagtttat tcattgagta cggaaaagct tttaggctcat cttcaacagg aagcaaagca 720
gaaagtttg ttgttaatat atttatgca gcttatggag ctggccaaac actgctaagg 780
tgggggtca ttgccagatc atccaacaac ataatgctag ggcattgtatc tggtaatct 840
gaattgaagc aagttacaga gtttatgac ttgggtcgag aaatgggtcc tgaatctggg 900
cttttacatc taagacaaag tccaaaggca gggctgttat cattggccaa ttgtcccaat 960

tttgctagtg ttgttcttgg caatgcttca ggtctaggca taatcggaaat gtacagaggg 1020
agagtaccaa acacagagct attttctgca gcagaaaagtt atgccagaag cttaaaagaa 1080
agcaataaaa tcaacttctc ttcggttaggg cttacagatg aagaaaaaga agctgcagaa 1140
cacttcttaa acatgagtgg tgacaatcaa aatgattatg agtaa 1185

<210> 373

<211> 1185

<212> DNA

<213> human metapneumo virus

<400> 373

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tctcaataca caataaaaag agatgttaggc accacaactg cagtgacacc ttcatcattt 120
cagcaagaga taacactttt gtgtggagag attcttaca ctaaacatac tgattacaaa 180
tatgctgcag agatagggat acaatatattt tgcacagctc taggatcaga aagagtacaa 240
cagattttaa gaaattcagg tagtgagggtt caggtggttc taaccaagac atactctta 300
gggaaaggta aaaatagtaa aggggaagag ttgcaaatgt tagatataca tggagtggaa 360
aagagttggg tagaagaaat agacaaagag gcaagaaaaa caatgtgac tttgctaaag 420
gaatcatcag gcaacatccc acaaaaaccag aggccttcag caccagacac accaataatt 480
ttattgtgtg taggtgcttt aatattact aaacttagcat caacaataga agttggacta 540
gagactacag ttagaagggc taacagatg ttaagtgtat cgctcaaaaag atacccttagg 600
gtagatatac caaagattgc tagatcttt tatgaactat ttgagcagaa agtgtattac 660
aggagtctat tcattgagta tggaaagct ttaggctcat cttcaacagg aagcaaagca 720
gaaagttgtt ttgtaaatat atttatgcaaa gcttatggag ccggtcagac aatgctaagg 780
tggggtgca ttgccagatc atctaacaac ataatgttag ggcatgtatc tgcagact 840
gaattgaaac aagttacaga gtttatgtat ttggttagag aaatgggtcc tgaatctggg 900
cttttacatc taagacaaag tccaaaggca ggactgttat cgttggctaa ttgccccaaat 960
tttgctagtg ttgttcttgg taatgcttca ggtctaggtt taatcggaaat gtacagggga 1020
agagtgc当地 acacagagct attttctgca gcagaaaagtt atgccagaag cttaaaagaa 1080
agcaacaaaa tcaacttctc ctcatttaggg ctcacagacg aagaaaaaga agctgcagaa 1140
cacttcttaa acatgagtga tgacaatcaa gatgattatg agtaa 1185

<210> 374

<211> 294

<212> PRT

<213> human metapneumo virus

<400> 374

Met	Ser	Phe	Pro	Glu	Gly	Lys	Asp	Ile	Leu	Phe	Met	Gly	Asn	Glu	Ala
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Ala	Lys	Leu	Ala	Glu	Ala	Phe	Gln	Lys	Ser	Leu	Arg	Lys	Pro	Gly	His
								20		25				30	
Lys	Arg	Ser	Gln	Ser	Ile	Ile	Gly	Glu	Lys	Val	Asn	Thr	Val	Ser	Glu
								35		40			45		
Thr	Leu	Glu	Leu	Pro	Thr	Ile	Ser	Arg	Pro	Ala	Lys	Pro	Thr	Ile	Pro
								50		55			60		
Ser	Glu	Pro	Lys	Leu	Ala	Trp	Thr	Asp	Lys	Gly	Gly	Ala	Thr	Lys	Thr
								65		70			75		80
Glu	Ile	Lys	Gln	Ala	Ile	Lys	Val	Met	Asp	Pro	Ile	Glu	Glu	Glu	
								85		90			95		
Ser	Thr	Glu	Lys	Val	Leu	Pro	Ser	Ser	Asp	Gly	Lys	Thr	Pro	Ala	
								100		105			110		
Glu	Lys	Lys	Leu	Lys	Pro	Ser	Thr	Asn	Thr	Lys	Lys	Val	Ser	Phe	
								115		120			125		
Thr	Pro	Asn	Glu	Pro	Gly	Lys	Tyr	Thr	Lys	Leu	Glu	Lys	Asp	Ala	Leu
								130		135			140		
Asp	Leu	Leu	Ser	Asp	Asn	Glu	Glu	Asp	Ala	Glu	Ser	Ser	Ile	Leu	
								145		150			155		160
Thr	Phe	Glu	Glu	Arg	Asp	Thr	Ser	Ser	Leu	Ser	Ile	Glu	Ala	Arg	Leu
								165		170			175		
Glu	Ser	Ile	Glu	Glu	Lys	Leu	Ser	Met	Ile	Leu	Gly	Leu	Leu	Arg	Thr

180	185	190	
Leu Asn Ile Ala Thr Ala Gly Pro	Thr Ala Ala Arg Asp	Gly Ile Arg	
195	200	205	
Asp Ala Met Ile Gly Val Arg	Glu Glu Leu Ile Ala Asp	Ile Ile Lys	
210	215	220	
Glu Ala Lys Gly Lys Ala Ala	Glu Met Met Glu	Glu Met Ser Gln	
225	230	235	240
Arg Ser Lys Ile Gly Asn Gly Ser Val	Lys Leu Thr Glu Lys	Ala Lys	
245	250	255	
Glu Leu Asn Lys Ile Val Glu Asp	Glu Ser Thr Ser Gly	Glu Ser Glu	
260	265	270	
Glu Glu Glu Pro Lys Asp	Thr Gln Asp Asn Ser Gln	Glu Asp Asp	
275	280	285	
Ile Tyr Gln Leu Ile Met			
290			

<210> 375
 <211> 294
 <212> PRT
 <213> human metapneumo virus

<400> 375			
Met Ser Phe Pro Glu Gly Lys Asp Ile	Leu Phe Met Gly Asn Glu Ala		
1	5	10	15
Ala Lys Leu Ala Glu Ala Phe Gln	Lys Ser Leu Arg Lys Pro Asn His		
20	25	30	
Lys Arg Ser Gln Ser Ile Ile	Gly Glu Lys Val Asn Thr Val Ser Glu		
35	40	45	
Thr Leu Glu Leu Pro Thr Ile Ser Arg	Pro Thr Lys Pro Thr Ile Leu		
50	55	60	
Ser Glu Pro Lys Leu Ala Trp	Thr Asp Lys Gly Gly Ala Ile Lys Thr		
65	70	75	80
Glu Ala Lys Gln Thr Ile Lys Val Met	Asp Pro Ile Glu Glu Glu		
85	90	95	
Phe Thr Glu Lys Arg Val Leu Pro	Ser Ser Asp Gly Lys Thr Pro Ala		
100	105	110	
Glu Lys Lys Leu Lys Pro Ser Thr Asn	Thr Lys Lys Lys Val Ser Phe		
115	120	125	
Thr Pro Asn Glu Pro Gly Lys	Tyr Thr Lys Leu Glu Lys Asp Ala Leu		
130	135	140	
Asp Leu Leu Ser Asp Asn Glu Glu	Asp Ala Glu Ser Ser Ile Leu		
145	150	155	160
Thr Phe Glu Glu Arg Asp Thr Ser	Ser Leu Ser Ile Glu Ala Arg Leu		
165	170	175	
Glu Ser Ile Glu Glu Lys Leu Ser	Met Ile Leu Gly Leu Leu Arg Thr		
180	185	190	
Leu Asn Ile Ala Thr Ala Gly	Pro Thr Ala Ala Arg Asp	Gly Ile Arg	
195	200	205	
Asp Ala Met Ile Gly Ile Arg	Glu Glu Leu Ile Ala Asp	Ile Ile Lys	
210	215	220	
Glu Ala Lys Gly Lys Ala Ala	Glu Met Met Glu	Glu Met Asn Gln	
225	230	235	240
Arg Thr Lys Ile Gly Asn Gly Ser	Val Lys Leu Thr Glu Lys	Ala Lys	
245	250	255	
Glu Leu Asn Lys Ile Val Glu Asp	Glu Ser Thr Ser Gly	Glu Ser Glu	
260	265	270	
Glu Glu Glu Pro Lys Asp	Thr Gln Glu Asn Asn Gln	Glu Asp Asp	
275	280	285	
Ile Tyr Gln Leu Ile Met			
290			

<210> 376
 <211> 294
 <212> PRT
 <213> human metapneumo virus

<400> 376
 Met Ser Phe Pro Glu Gly Lys Asp Ile Leu Phe Met Gly Asn Glu Ala
 1 5 10 15
 Ala Lys Ile Ala Glu Ala Phe Gln Lys Ser Leu Lys Lys Ser Gly His
 20 25 30
 Lys Arg Thr Gln Ser Ile Val Gly Glu Lys Val Asn Thr Ile Ser Glu
 35 40 45
 Thr Leu Glu Leu Pro Thr Ile Ser Lys Pro Ala Arg Ser Ser Thr Leu
 50 55 60
 Leu Glu Pro Lys Leu Ala Trp Ala Asp Asn Ser Gly Ile Thr Lys Ile
 65 70 75 80
 Thr Glu Lys Pro Ala Thr Lys Thr Asp Pro Val Glu Glu Glu
 85 90 95
 Phe Asn Glu Lys Val Leu Pro Ser Ser Asp Gly Lys Thr Pro Ala
 100 105 110
 Glu Lys Lys Ser Lys Phe Ser Thr Ser Val Lys Lys Val Ser Phe
 115 120 125
 Thr Ser Asn Glu Pro Gly Lys Tyr Thr Lys Leu Glu Lys Asp Ala Leu
 130 135 140
 Asp Leu Leu Ser Asp Asn Glu Glu Glu Asp Ala Glu Ser Ser Ile Leu
 145 150 155 160
 Thr Phe Glu Glu Lys Asp Thr Ser Ser Leu Ser Ile Glu Ala Arg Leu
 165 170 175
 Glu Ser Ile Glu Lys Leu Ser Met Ile Leu Gly Leu Leu Arg Thr
 180 185 190
 Leu Asn Ile Ala Thr Ala Gly Pro Thr Ala Ala Arg Asp Gly Ile Arg
 195 200 205
 Asp Ala Met Ile Gly Ile Arg Glu Glu Leu Ile Ala Glu Ile Ile Lys
 210 215 220
 Glu Ala Lys Gly Lys Ala Ala Glu Met Met Glu Glu Glu Met Asn Gln
 225 230 235 240
 Arg Ser Lys Ile Gly Asn Gly Ser Val Lys Leu Thr Glu Lys Ala Lys
 245 250 255
 Glu Leu Asn Lys Ile Val Glu Asp Glu Ser Thr Ser Gly Glu Ser Glu
 260 265 270
 Glu Glu Glu Pro Lys Glu Thr Gln Asp Asn Asn Gln Gly Glu Asp
 275 280 285
 Ile Tyr Gln Leu Ile Met
 290

<210> 377
 <211> 294
 <212> PRT
 <213> human metapneumo virus

<400> 377
 Met Ser Phe Pro Glu Gly Lys Asp Ile Leu Phe Met Gly Asn Glu Ala
 1 5 10 15
 Ala Lys Ile Ala Glu Ala Phe Gln Lys Ser Leu Lys Arg Ser Gly His
 20 25 30
 Lys Arg Thr Gln Ser Ile Val Gly Glu Lys Val Asn Thr Ile Ser Glu
 35 40 45
 Thr Leu Glu Leu Pro Thr Ile Ser Lys Pro Ala Arg Ser Ser Thr Leu

50	55	60													
Leu	Glu	Pro	Lys	Leu	Ala	Trp	Ala	Asp	Ser	Ser	Gly	Ala	Thr	Lys	Thr
65															
Thr	Glu	Lys	Gln	Thr	Thr	Lys	Thr	Thr	Asp	Pro	Val	Glu	Glu	Glu	
Leu	Asn	Glu	Lys	Lys	Val	Ser	Pro	Ser	Ser	Asp	Gly	Lys	Thr	Pro	Ala
100															
105															
110															
Glu	Lys	Lys	Ser	Lys	Ser	Pro	Thr	Asn	Val	Lys	Lys	Val	Ser	Phe	
115															
120															
125															
Thr	Ser	Asn	Glu	Pro	Gly	Lys	Tyr	Thr	Lys	Leu	Glu	Lys	Asp	Ala	Leu
130															
135															
140															
Asp	Leu	Leu	Ser	Asp	Asn	Glu	Glu	Asp	Ala	Glu	Ser	Ser	Ile	Leu	
145															
150															
155															
160															
Thr	Phe	Glu	Glu	Arg	Asp	Thr	Ser	Ser	Leu	Ser	Ile	Glu	Ala	Arg	Leu
165															
170															
175															
Glu	Ser	Ile	Glu	Lys	Leu	Ser	Met	Ile	Leu	Gly	Leu	Leu	Arg	Thr	
180															
185															
190															
Leu	Asn	Ile	Ala	Thr	Ala	Gly	Pro	Thr	Ala	Ala	Arg	Asp	Gly	Ile	Arg
195															
200															
205															
Asp	Ala	Met	Ile	Gly	Ile	Arg	Glu	Glu	Leu	Ile	Ala	Ile	Ile	Lys	
210															
215															
220															
Glu	Ala	Lys	Gly	Lys	Ala	Ala	Glu	Met	Met	Glu	Glu	Met	Asn	Gln	
225															
230															
235															
Arg	Ser	Lys	Ile	Gly	Asn	Gly	Ser	Val	Lys	Leu	Thr	Glu	Lys	Ala	Lys
245															
250															
255															
Glu	Leu	Asn	Ile	Val	Glu	Asp	Glu	Ser	Thr	Ser	Gly	Glu	Ser	Glu	
260															
265															
270															
Glu	Glu	Glu	Glu	Pro	Lys	Glu	Thr	Gln	Asp	Asn	Asn	Gln	Gly	Glu	Asp
275															
280															
285															
Ile	Tyr	Gln	Leu	Ile	Met										
290															

<210> 378															
<211> 885															
<212> DNA															
<213> human metapneumo virus															
<400> 378															
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gaagctttcc	agaaaatcatt	aagaaaacca	ggtcataaaaa	gatctcaatc	tattatagga	120									
aaaaaaagtga	atactgtatc	agaaaacattg	gaattaccta	ctatcagtag	acctgcaaaa	180									
ccaaaccatac	cgtcagaacc	aaagtttagca	tggacagata	aagggtggggc	aacccaaaact	240									
gaaataaaagc	aagcaatcaa	agtcatggat	cccattgaag	aagaagagtc	taccgagaag	300									
aagggtctac	cctccagtga	tgggaaaacc	cctgcagaaa	agaaactgaa	accatcaact	360									
acacccaaa	agaaggtttc	atttaccca	aatgaaccag	ggaaatatac	aaagttggaa	420									
aaagatgctc	tagatttgct	ctcagataat	gaagaagaag	atgcagaatc	tcaatctta	480									
acctttgaag	aaagagatac	ttcatcatta	agcattgagg	ccagatttgg	atcaatagag	540									
gagaaatataa	gcatgatatt	agggcttata	agaacactca	acattgctac	agcaggacc	600									
acagcagcaa	gagatggat	cagagatgca	atgattggcg	taagagagga	attaatagca	660									
gacataataa	aggaagctaa	agggaaaagca	gcagaaatga	tggaaagagga	aatgagtcaa	720									
cgatcaaaaa	taggaaatgg	tagtgtaaaa	ttaacagaaa	aagcaaaaaga	gctcaacaaa	780									
attgttgaag	atgaaagcac	aagtggagaa	tccgaagaag	aagaagaacc	aaaagacaca	840									
caagacaata	gtcaagaaga	tgacatttac	cagtttaattt	tgttag		885									
<210> 379															
<211> 885															
<212> DNA															
<213> human metapneumo virus															
<400> 379															

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gaagctttc aaaaatcatt aagaaaacct aatcataaaa gatctcaatc tattatagga 120
gaaaaagtga acactgtatc tgaacacattt gaattaccta ctatcagtag acctacaaa 180
ccgaccatat tgtagagcc gaagtttagca tgacagacca aaggtggggc aatcaaaaact 240
gaagcaaagc aaacaatcaa agttatggat cttatggaa aagaagagtt tactgagaaa 300
agggtgctgc cttccagtga tggaaaact cttgcagaaa agaaggtaa accatcaacc 360
aacactaaaa agaaggctc atttacacca aatgaaccag gaaaatacac aaggtggag 420
aaagatgctc tagatgtct ttcagacaat gaagaagaag atgcagaatc ctaatctta 480
acttcgaag aaagagatac ttcatcatta agcattgaag ccagactaga atcgatttag 540
gagaaaattaa gcatgatatt agggctatta agaacactca acattgtac agcaggaccc 600
acagcagcaa gagatggat cagagatgca atgattggca taagggagga actaatagca 660
gacataataa aagaagccaa gggaaaagca gcagaaatga tggaaagaag aatgaaccag 720
cgacaaaaaa taggaaacgg tagttaaaaa ttaactgaaa aggcaaaagg gctcaacaaa 780
attgttgaag acgaaagcac aagtggtaa tccgaagaag aagaagaacc aaaagacaca 840
caggaaaata atcaagaaga tgacatttac cagttatca tgttag 885

<210> 380
<211> 885
<212> DNA
<213> human metapneumo virus

<400> 380
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gaagctttcc agaaatcact gaaaaaatca ggtcacaaga gaactcaatc tattgttaggg 120
gaaaaagtta acactatatac agaaaactcta gaactaccta ccatcagcaa acctgcacga 180
tcatctacac tgcttggacc aaaattggca tggcagacca acagcggaaat caccaaaatc 240
acagaaaaac cagcaaccaa aacaacagat cttgttgaag aagagaatt caatgaaaag 300
aaagtgttac cttccagtga tggaaagact cttgcagaga aaaaatcaaa gtttcaacc 360
agtgtaaaaa agaaagtttcc ttcatcata aatgaaccag gggaaatacac caaactagag 420
aaagatgccc tagatgtct ctcagacaat gaggagaag acgcagaatc ctaatccctt 480
actttgagg agaaagatac atcatcacta agcattgaag ctagactaga atctatagaa 540
gagaagttga gcatgatatt aggactgctt cgtacactta acattgcac acgaggacca 600
acagctgcac gagatggat tagggatgca atgattggta taagagaaga gctaatacg 660
gagataattt aggaagccaa gggaaaagca gctgaaatga tggaaagaag gatgaatcaa 720
agataaaaaa taggaaatgg cagtttaaaa ctaaccgaga aggcaaaaga gctcaacaaa 780
attgttgaag acgagagcac aagcggtgaa tcagaagaag aagaagaacc aaaagaaaact 840
caggataaca atcaaggaga agatatttat cagttatca tgttag 885

<210> 381
<211> 885
<212> DNA
<213> human metapneumo virus

<400> 381
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gaagctttcc agaaatcact aaaaagatca ggtcacaaaaa gaaccagtc tattgttaggg 120
gaaaaagtta acactatatac agaaaactcta gagctaccta ccatcagcaa acctgcacga 180
tcatctacac tgcttagagcc aaaattggca tggcagacca gcagcggagc caccaaaacc 240
acagaaaaac aaacaaccaa aacaacagat cttgttgaag aagagaact caatgaaaag 300
aaggtatcac cttccagtga tggaaagact cttgcagaga aaaaatcaaa atctccaacc 360
aatgtaaaaa agaaagtttcc ttccatcata aatgaaccag gggaaatacac taaaactagaa 420
aaagatgccc tagatgtct ctcagacaat gaggagaag acgcagatc ctaatccctt 480
acctttgaag agagagacac atcatcacta agcattgagg ctagactaga atcaatagaa 540
gagaagctaa gcatgatatt aggactgctt cgtacactta acattgcac acgaggacca 600
acggctgcaaa gggatggat cagagatgca atgattggta taagagaaga actaatagca 660
gaaataataa aagaagccaa gggaaaagca gccgaaatga tggaaagagga aatgaatcaa 720
aggtcaaaaa taggaaatgg cagtttaaaa ctaaccgaga aggcaaaaga acttaataaa 780
attgttgaag acgagagcac aagtggtaa tcagaagaag aagaagaacc aaaagaaaact 840
caggataaca atcaaggaga agatattcac cagttatca tgttag 885

<210> 382

<211> 183
<212> PRT
<213> human metapneumo virus

<400> 382
Met Ile Thr Leu Asp Val Ile Lys Ser Asp Gly Ser Ser Lys Thr Cys
1 5 10 15
Thr His Leu Lys Lys Ile Ile Lys Asp His Ser Gly Lys Val Leu Ile
20 25 30
Val Leu Lys Leu Ile Leu Ala Leu Leu Thr Phe Leu Thr Val Thr Ile
35 40 45
Thr Ile Asn Tyr Ile Lys Val Glu Asn Asn Leu Gln Ile Cys Gln Ser
50 55 60
Lys Thr Glu Ser Asp Lys Lys Asp Ser Ser Ser Asn Thr Thr Ser Val
65 70 75 80
Thr Thr Lys Thr Thr Leu Asn His Asp Ile Thr Gln Tyr Phe Lys Ser
85 90 95
Leu Ile Gln Arg Tyr Thr Asn Ser Ala Ile Asn Ser Asp Thr Cys Trp
100 105 110
Lys Ile Asn Arg Asn Gln Cys Thr Asn Ile Thr Thr Tyr Lys Phe Leu
115 120 125
Cys Phe Lys Ser Glu Asp Thr Lys Thr Asn Asn Cys Asp Lys Leu Thr
130 135 140
Asp Leu Cys Arg Asn Lys Pro Lys Pro Ala Val Gly Val Tyr His Ile
145 150 155 160
Val Glu Cys His Cys Ile Tyr Thr Val Lys Trp Lys Cys Tyr His Tyr
165 170 175
Pro Thr Asp Glu Thr Gln Ser
180

<210> 383
<211> 179
<212> PRT
<213> human metapneumo virus

<400> 383
Met Ile Thr Leu Asp Val Ile Lys Ser Asp Gly Ser Ser Lys Thr Cys
1 5 10 15
Thr His Leu Lys Lys Ile Ile Lys Asp His Ser Gly Lys Val Leu Ile
20 25 30
Ala Leu Lys Leu Ile Leu Ala Leu Leu Thr Phe Phe Thr Ile Thr Ile
35 40 45
Thr Ile Asn Tyr Ile Lys Val Glu Asn Asn Leu Gln Ile Cys Gln Ser
50 55 60
Lys Thr Glu Ser Asp Lys Glu Asp Ser Pro Ser Asn Thr Thr Ser Val
65 70 75 80
Thr Thr Lys Thr Thr Leu Asp His Asp Ile Thr Gln Tyr Phe Lys Arg
85 90 95
Leu Ile Gln Arg Tyr Thr Asp Ser Val Ile Asn Lys Asp Thr Cys Trp
100 105 110
Lys Ile Ser Arg Asn Gln Cys Thr Asn Ile Thr Thr Tyr Lys Phe Leu
115 120 125
Cys Phe Lys Pro Glu Asp Ser Lys Ile Asn Ser Cys Asp Arg Leu Thr
130 135 140
Asp Leu Cys Arg Asn Lys Ser Lys Ser Ala Ala Glu Ala Tyr His Thr
145 150 155 160
Val Glu Cys His Cys Ile Tyr Thr Ile Glu Trp Lys Cys Tyr His His
165 170 175
Pro Ile Asp

<210> 384
<211> 177
<212> PRT
<213> human metapneumo virus

<400> 384
Met Lys Thr Leu Asp Val Ile Lys Ser Asp Gly Ser Ser Glu Thr Cys
1 5 10 15
Asn Gln Leu Lys Lys Ile Ile Lys Lys His Ser Gly Lys Val Leu Ile
20 25 30
Ala Leu Lys Leu Ile Leu Ala Leu Leu Thr Phe Phe Thr Ala Thr Ile
35 40 45
Thr Val Asn Tyr Ile Lys Val Glu Asn Asn Leu Gln Ala Cys Gln Pro
50 55 60
Lys Asn Glu Ser Asp Lys Lys Val Thr Lys Pro Asn Thr Thr Ser Thr
65 70 75 80
Thr Ile Arg Pro Thr Pro Asp Pro Thr Val Val His His Leu Lys Arg
85 90 95
Leu Ile Gln Arg His Thr Asn Ser Val Thr Lys Asp Ser Asp Thr Cys
100 105 110
Trp Arg Ile His Lys Asn Gln Arg Thr Asn Ile Lys Ile Tyr Lys Phe
115 120 125
Leu Cys Ser Gly Phe Thr Asn Ser Lys Gly Thr Asp Cys Glu Glu Pro
130 135 140
Thr Ala Leu Cys Asp Lys Lys Leu Lys Thr Ile Val Glu Lys His Arg
145 150 155 160
Lys Ala Glu Cys His Cys Leu His Thr Thr Glu Trp Gly Cys Leu His
165 170 175
Pro

<210> 385
<211> 177
<212> PRT
<213> human metapneumo virus

<400> 385
Met Lys Thr Leu Asp Val Ile Lys Ser Asp Gly Ser Ser Glu Thr Cys
1 5 10 15
Asn Gln Leu Lys Lys Ile Ile Lys Lys His Ser Gly Lys Leu Leu Ile
20 25 30
Ala Leu Lys Leu Ile Leu Ala Leu Leu Thr Phe Phe Thr Val Thr Ile
35 40 45
Thr Val Asn Tyr Ile Lys Val Glu Asn Asn Leu Gln Ala Cys Gln Leu
50 55 60
Lys Asn Glu Ser Asp Lys Lys Asp Thr Lys Leu Asn Thr Thr Ser Thr
65 70 75 80
Thr Ile Arg Pro Ile Pro Asp Leu Asn Ala Val Gln Tyr Leu Lys Arg
85 90 95
Leu Ile Gln Lys His Thr Asn Phe Val Ile Lys Asp Arg Asp Thr Cys
100 105 110
Trp Arg Ile His Thr Asn Gln Cys Thr Asn Ile Lys Ile Tyr Lys Phe
115 120 125
Leu Cys Phe Gly Phe Met Asn Ser Thr Asn Thr Asp Cys Glu Glu Leu
130 135 140
Thr Val Leu Cys Asp Lys Lys Ser Lys Thr Met Thr Glu Lys His Arg
145 150 155 160
Lys Ala Glu Cys His Cys Leu His Thr Thr Glu Trp Trp Cys Tyr Tyr

165

170

175

Leu

<210> 386
<211> 552
<212> DNA
<213> human metapneumo virus

<400> 386
atgataacat tagatgtcat taaaagtgtat gggcttcaa aaacatgtac tcacacctaaa 60
aaaataatta aagaccactc tggtaaagtgc ttattgtac ttaagttat attagcttta 120
ctaacatttc tcacagtaac aatcaccatc aattatataa aagtggaaaa caatctgcaa 180
atatgccagt caaaaactga atcagacaaa aaggactcat catcaaatac cacatcagtc 240
acaaccaaga ctactctaaa tcatgtatc acacagtatt taaaagttt gattcaaagg 300
tatacaaact ctgcaataaa cagtgcacaca tgctggaaaa taaacagaaaa tcaatgcaca 360
aatataacaa catacaaatt tttatgtttt aaatctgaag acacaaaaac caacaattgt 420
gataaaactga cagatttatg cagaaacaaa cccaaaccag cagttggagt gtatcacata 480
gtagaatgcc attgtatata cacagttaaa tggaagtgc atcattaccc aaccgatgaa 540
acccaatcct aa 552

<210> 387
<211> 540
<212> DNA
<213> human metapneumo virus

<400> 387
atgataacat tagatgtcat taaaagtgtat gggcttcaa aaacatgtac tcacacctaaa 60
aaaataatca aagaccattc tggtaaagtgc ttattgcac ttaagttat attagcttta 120
ctaacatttt tcacaataac aatcactata aattacatataa aagtggaaaa caatctacaa 180
atatgccagt caaaaactga atcagacaaa gaagactcac catcaaatac cacatccgtc 240
acaaccaaga ctactctaga ccatgtatc acacagtatt taaaagatt aattcaaagg 300
tatacagatt ctgtgataaa caaggacaca tgctggaaaa taagcagaaaa tcaatgcaca 360
aatataacaa catataaaatt tttatgtttt aacacctgagg actcaaaaat caacagttgt 420
gatagactga cagatctatg cagaaacaaa tcaaaaatca cagctgaagc atatcataca 480
gtagaatgcc attgcataata cacaatttgag tggaagtgc atcaccaccc aatagattaa 540

<210> 388
<211> 534
<212> DNA
<213> human metapneumo virus

<400> 388
atgaaaacat tagatgtcat aaaaagtgtat ggatcctcag aaacgtgtaa tcaactcaaa 60
aaaataataa aaaaacactc aggttaaagtgc ttattgcac taaaactgtat attggcctta 120
ctgacattt tcacagcaac aatcactgtc aactatataa aagtggaaaa caatttgcag 180
gcatgtcaac caaaaatga atcagacaaa aaggtcacaa agccaaatac cacatcaaca 240
acaatcagac ccacacccga tccaaactgtc gtacatcatt tgaaaaggct gattcagaga 300
cacaccaact ctgtcacaaa agacagcgat acttggggaa gaatacacaa gaatcaacgt 360
acaatataaa aaatatacaa gttcttatgc tctgggttca caaattcaaa aggtacagat 420
tgtgaggaac caacagccct atgcgacaaa aagttaaaaa ccatagtaga aaaacataga 480
aaagcagaat gtcaactgtct acatacaacc gagtgggggt gccttcatcc ctaa 534

<210> 389
<211> 534
<212> DNA
<213> human metapneumo virus

<400> 389

atgaaaacat tagatgtcat aaaaagtcat ggatcctcag aaacatgtaa tcaactcaa 60
aaaataataa aaaaacactc aggtaaattt ctatttgcatt taaaactgtat attggccta 120
ttgacgttt tcacagtaac aattactgtt aactatataa aagttagaaaa caatttgcag 180
gcatgtcaat taaaaatgtt atcagacaaaa aaggacacaa agctaaatac cacatcaaca 240
acaatcagac ccattcctga tctaaatgca gtacagttact tgaaaaggct gattcagaaa 300
cacaccaact ttgtcataaa agacagagat acctgttggaa gaatacacac gaatcaatgc 360
acaatataaa aaatataaa gttcttatgt ttcgggtta tgaattcaac aaatacagac 420
tgtgaagaac taacagttt atgtgataaa aagtcaaaaa ccatgacaga aaaacatagg 480
aaagcagagt gtcactgtct acatacaacc gagtggtgg tttattatct ttaa 534

<210> 390
<211> 298
<212> PRT
<213> Human respiratory syncytial virus

<220>
<223> attachment glycoprotein of Human respiratory syncytial virus

<400> 390

Met	Ser	Lys	Thr	Lys	Asp	Gln	Arg	Thr	Ala	Lys	Thr	Leu	Glu	Arg	Thr
1										10					15
Trp	Asp	Thr	Leu	Asn	His	Leu	Leu	Phe	Ile	Ser	Ser	Cys	Leu	Tyr	Lys
									20		25				30
Leu	Asn	Leu	Lys	Ser	Ile	Ala	Gln	Ile	Thr	Leu	Ser	Ile	Leu	Ala	Met
									35		40				45
Ile	Ile	Ser	Thr	Ser	Leu	Ile	Ile	Ala	Ala	Ile	Ile	Phe	Ile	Ala	Ser
									50		55				60
Ala	Asn	His	Lys	Val	Thr	Leu	Thr	Ala	Ile	Ile	Gln	Asp	Ala	Thr	
									65		70				80
Asn	Gln	Ile	Lys	Asn	Thr	Thr	Pro	Thr	Tyr	Leu	Thr	Gln	Asn	Pro	Gln
									85		90				95
Leu	Gly	Ile	Ser	Phe	Ser	Asn	Leu	Ser	Glu	Thr	Thr	Ser	Gln	Pro	Ile
									100		105				110
Thr	Ile	Leu	Ala	Ser	Thr	Thr	Pro	Ser	Ala	Glu	Ser	Thr	Pro	Gln	Ser
									115		120				125
Thr	Thr	Val	Lys	Thr	Lys	Asn	Thr	Thr	Thr	Thr	Gln	Ile	Gln	Pro	Ser
									130		135				140
Lys	Ser	Thr	Thr	Lys	Gln	Arg	Gln	Asn	Lys	Pro	Gln	Asn	Lys	Pro	Asn
									145		150				160
Asn	Asp	Phe	His	Phe	Glu	Val	Phe	Asn	Phe	Val	Pro	Cys	Ser	Ile	Cys
									165		170				175
Ser	Asn	Asn	Pro	Thr	Cys	Trp	Ala	Ile	Cys	Lys	Arg	Ile	Pro	Asn	Lys
									180		185				190
Lys	Pro	Gly	Lys	Lys	Thr	Thr	Thr	Lys	Pro	Thr	Lys	Lys	Pro	Thr	Ile
									195		200				205
Lys	Thr	Thr	Lys	Lys	Asp	Leu	Lys	Pro	Gln	Thr	Thr	Lys	Ser	Lys	Glu
									210		215				220
Val	Leu	Thr	Thr	Lys	Pro	Thr	Glu	Lys	Pro	Thr	Ile	Asn	Thr	Thr	Lys
									225		230				240
Thr	Asn	Ile	Arg	Thr	Thr	Leu	Leu	Ile	Ser	Asn	Thr	Thr	Gly	Asn	Pro
									245		250				255
Glu	His	Thr	Ser	Gln	Lys	Glu	Thr	Leu	His	Ser	Thr	Thr	Ser	Glu	Gly
									260		265				270
Asn	Pro	Ser	Pro	Ser	Gln	Val	Tyr	Thr	Thr	Ser	Glu	Tyr	Leu	Ser	Gln
									275		280				285
Ser	Leu	Ser	Pro	Ser	Asn	Thr	Thr	Tyr	Tyr						
									290		295				

<210> 391

<211> 574
 <212> PRT
 <213> Human respiratory syncytial virus

 <220>
 <223> fusion glycoprotein of Human respiratory syncytial virus

 <400> 391
 Met Glu Leu Pro Ile Leu Lys Ala Asn Ala Ile Thr Thr Ile Leu Ala
 1 5 10 15
 Ala Val Thr Leu Cys Phe Val Ser Ser Gln Asn Ile Thr Glu Glu Phe
 20 25 30
 Tyr Gln Ser Thr Cys Ser Ala Val Ser Lys Gly Tyr Leu Ser Ala Leu
 35 40 45
 Arg Thr Gly Trp Tyr Thr Ser Val Ile Thr Ile Glu Leu Ser Asn Ile
 50 55 60
 Lys Glu Asn Lys Cys Asn Gly Thr Asp Ala Lys Val Lys Leu Ile Lys
 65 70 75 80
 Gln Glu Leu Asp Lys Tyr Lys Asn Ala Val Thr Glu Leu Gln Leu Leu
 85 90 95
 Met Gln Ser Thr Pro Ala Ala Asn Asn Arg Ala Arg Arg Glu Leu Pro
 100 105 110
 Arg Phe Met Asn Tyr Thr Leu Asn Asn Thr Lys Asn Thr Asn Val Thr
 115 120 125
 Leu Ser Lys Lys Arg Lys Arg Arg Phe Leu Gly Phe Leu Leu Gly Val
 130 135 140
 Gly Ser Ala Ile Ala Ser Gly Ile Ala Val Ser Lys Val Leu His Leu
 145 150 155 160
 Glu Gly Glu Val Asn Lys Ile Lys Ser Ala Leu Leu Ser Thr Asn Lys
 165 170 175
 Ala Val Val Ser Leu Ser Asn Gly Val Ser Val Leu Thr Ser Lys Val
 180 185 190
 Leu Asp Leu Lys Asn Tyr Ile Asp Lys Gln Leu Leu Pro Ile Val Asn
 195 200 205
 Lys Gln Ser Cys Ser Ile Ser Asn Ile Glu Thr Val Ile Glu Phe Gln
 210 215 220
 Gln Lys Asn Asn Arg Leu Leu Glu Ile Thr Arg Glu Phe Ser Val Asn
 225 230 235 240
 Ala Gly Val Thr Thr Pro Val Ser Thr Tyr Met Leu Thr Asn Ser Glu
 245 250 255
 Leu Leu Ser Leu Ile Asn Asp Met Pro Ile Thr Asn Asp Gln Lys Lys
 260 265 270
 Leu Met Ser Asn Asn Val Gln Ile Val Arg Gln Gln Ser Tyr Ser Ile
 275 280 285
 Met Ser Ile Ile Lys Glu Glu Val Leu Ala Tyr Val Val Gln Leu Pro
 290 295 300
 Leu Tyr Gly Val Ile Asp Thr Pro Cys Trp Lys Leu His Thr Ser Pro
 305 310 315 320
 Leu Cys Thr Thr Asn Thr Lys Glu Gly Ser Asn Ile Cys Leu Thr Arg
 325 330 335
 Thr Asp Arg Gly Trp Tyr Cys Asp Asn Ala Gly Ser Val Ser Phe Phe
 340 345 350
 Pro Gln Ala Glu Thr Cys Lys Val Gln Ser Asn Arg Val Phe Cys Asp
 355 360 365
 Thr Met Asn Ser Leu Thr Leu Pro Ser Glu Val Asn Leu Cys Asn Val
 370 375 380
 Asp Ile Phe Asn Pro Lys Tyr Asp Cys Lys Ile Met Thr Ser Lys Thr
 385 390 395 400
 Asp Val Ser Ser Ser Val Ile Thr Ser Leu Gly Ala Ile Val Ser Cys
 405 410 415
 Tyr Gly Lys Thr Lys Cys Thr Ala Ser Asn Lys Asn Arg Gly Ile Ile

420	425	430
Lys Thr Phe Ser Asn Gly Cys Asp Tyr Val Ser Asn Lys Gly Val Asp		
435	440	445
Thr Val Ser Val Gly Asn Thr Leu Tyr Tyr Val Asn Lys Gln Glu Gly		
450	455	460
Lys Asn Leu Tyr Val Lys Gly Glu Pro Ile Ile Asn Phe Tyr Asp Pro		
465	470	475
Leu Val Phe Pro Ser Asp Glu Phe Asp Ala Ser Ile Ser Gln Val Asn		
485	490	495
Glu Lys Ile Asn Gln Ser Leu Ala Phe Ile Arg Lys Ser Asp Glu Leu		
500	505	510
Leu His Asn Val Asn Ala Gly Lys Ser Thr Thr Asn Ile Met Ile Thr		
515	520	525
Thr Ile Ile Ile Val Ile Ile Val Ile Leu Leu Ser Leu Ile Ala Val		
530	535	540
Gly Leu Leu Leu Tyr Cys Lys Ala Arg Ser Thr Pro Val Thr Leu Ser		
545	550	555
Lys Asp Gln Leu Ser Gly Ile Asn Asn Ile Ala Phe Ser Ser		
565	570	

<210> 392

<211> 64

<212> PRT

<213> Human respiratory syncytial virus

<220>

<223> small hydrophobic protein of Human respiratory syncytial virus

<400> 392

Met Glu Asn Thr Ser Ile Thr Ile Glu Phe Ser Ser Lys Phe Trp Pro		
1	5	10
Tyr Phe Thr Leu Ile His Met Ile Thr Thr Ile Ile Ser Leu Leu Ile		
20	25	30
Ile Ile Ser Ile Met Ile Ala Ile Leu Asn Lys Leu Cys Glu Tyr Asn		
35	40	45
Ala Phe His Asn Lys Thr Phe Glu Leu Pro Arg Ala Arg Ile Asn Thr		
50	55	60

<210> 393

<211> 2165

<212> PRT

<213> Human respiratory syncytial virus (strain A2)

<220>

<223> RNA polymerase beta subunit (Large structural protein) (L protein) of Human respiratory syncytial virus

<400> 393

Met Asp Pro Ile Ile Asn Gly Asn Ser Ala Asn Val Tyr Leu Thr Asp		
1	5	10
Ser Tyr Leu Lys Gly Val Ile Ser Phe Ser Glu Cys Asn Ala Leu Gly		
20	25	30
Ser Tyr Ile Phe Asn Gly Pro Tyr Leu Lys Asn Asp Tyr Thr Asn Leu		
35	40	45
Ile Ser Arg Gln Asn Pro Leu Ile Glu His Met Asn Leu Lys Lys Leu		
50	55	60
Asn Ile Thr Gln Ser Leu Ile Ser Lys Tyr His Lys Gly Glu Ile Lys		
65	70	75
Leu Glu Glu Pro Thr Tyr Phe Gln Ser Leu Leu Met Thr Tyr Lys Ser		
80		

85	90	95
Met Thr Ser Ser Glu Gln Ile Ala Thr	Thr Asn Leu Leu Lys	Lys Ile
100	105	110
Ile Arg Arg Ala Ile Glu Ile Ser Asp	Val Lys Val Tyr Ala Ile Leu	
115	120	125
Asn Lys Leu Gly Leu Lys Glu Lys Asp	Lys Ile Lys Ser Asn Asn Gly	
130	135	140
Gln Asp Glu Asp Asn Ser Val Ile Thr	Thr Ile Ile Lys Asp Asp Ile	
145	150	155
Leu Ser Ala Val Lys Asp Asn Gln Ser	His Leu Lys Ala Asp Lys Asn	
165	170	175
His Ser Thr Lys Gln Lys Asp Thr	Ile Lys Thr Thr Leu Leu Lys	
180	185	190
Leu Met Cys Ser Met Gln His Pro Pro	Ser Trp Leu Ile His Trp Phe	
195	200	205
Asn Leu Tyr Thr Lys Leu Asn Asn Ile	Leu Thr Gln Tyr Arg Ser Asn	
210	215	220
Glu Val Lys Asn His Gly Phe Thr Leu	Ile Asp Asn Gln Thr Leu Ser	
225	230	235
Gly Phe Gln Phe Ile Leu Asn Gln Tyr	Gly Cys Ile Val Tyr His Lys	
245	250	255
Glu Leu Lys Arg Ile Thr Val Thr	Tyr Asn Gln Phe Leu Thr Trp	
260	265	270
Lys Asp Ile Ser Leu Ser Arg Leu Asn	Val Cys Leu Ile Thr Trp Ile	
275	280	285
Ser Asn Cys Leu Asn Thr Leu Asn Lys	Ser Leu Gly Leu Arg Cys Gly	
290	295	300
Phe Asn Asn Val Ile Leu Thr Gln Leu	Phe Leu Tyr Gly Asp Cys Ile	
305	310	315
Leu Lys Leu Phe His Asn Glu Gly Phe	Tyr Ile Ile Lys Glu Val Glu	
325	330	335
Gly Phe Ile Met Ser Leu Ile Leu Asn	Ile Thr Glu Glu Asp Gln Phe	
340	345	350
Arg Lys Arg Phe Tyr Asn Ser Met Leu	Asn Asn Ile Thr Asp Ala Ala	
355	360	365
Asn Lys Ala Gln Lys Asn Leu Leu	Ser Arg Val Cys His Thr Leu Leu	
370	375	380
Asp Lys Thr Val Ser Asp Asn Ile Ile	Asn Gly Arg Trp Ile Ile Leu	
385	390	395
Leu Ser Lys Phe Leu Lys Leu Ile Lys	Leu Ala Gly Asp Asn Asn Leu	
405	410	415
Asn Asn Leu Ser Glu Leu Tyr Phe	Leu Phe Arg Ile Phe Gly His Pro	
420	425	430
Met Val Asp Glu Arg Gln Ala Met Asp	Ala Val Lys Ile Asn Cys Asn	
435	440	445
Glu Thr Lys Phe Tyr Leu Leu Ser	Ser Leu Ser Met Leu Arg Gly Ala	
450	455	460
Phe Ile Tyr Arg Ile Ile Lys Gly Phe	Val Asn Asn Tyr Asn Arg Trp	
465	470	475
Pro Thr Leu Arg Asn Ala Ile Val	Leu Pro Leu Arg Trp Leu Thr Tyr	
485	490	495
Tyr Lys Leu Asn Thr Tyr Pro Ser	Leu Leu Glu Leu Thr Glu Arg Asp	
500	505	510
Leu Ile Val Leu Ser Gly Leu Arg Phe	Tyr Arg Glu Phe Arg Leu Pro	
515	520	525
Lys Lys Val Asp Leu Glu Met Ile Ile	Asn Asp Lys Ala Ile Ser Pro	
530	535	540
Pro Lys Asn Leu Ile Trp Thr Ser Phe	Pro Arg Asn Tyr Met Pro Ser	
545	550	555
His Ile Gln Asn Tyr Ile Glu His Glu	Lys Leu Lys Phe Ser Glu Ser	
565	570	575

Asp Lys Ser Arg Arg Val Leu Glu Tyr Tyr Leu Arg Asp Asn Lys Phe
 580 585 590
 Asn Glu Cys Asp Leu Tyr Asn Cys Val Val Asn Gln Ser Tyr Leu Asn
 595 600 605
 Asn Pro Asn His Val Val Ser Leu Thr Gly Lys Glu Arg Glu Leu Ser
 610 615 620
 Val Gly Arg Met Phe Ala Met Gln Pro Gly Met Phe Arg Gln Val Gln
 625 630 635 640
 Ile Leu Ala Glu Lys Met Ile Ala Glu Asn Ile Leu Gln Phe Phe Pro
 645 650 655
 Glu Ser Leu Thr Arg Tyr Gly Asp Leu Glu Leu Gln Lys Ile Leu Glu
 660 665 670
 Leu Lys Ala Gly Ile Ser Asn Lys Ser Asn Arg Tyr Asn Asp Asn Tyr
 675 680 685
 Asn Asn Tyr Ile Ser Lys Cys Ser Ile Ile Thr Asp Leu Ser Lys Phe
 690 695 700
 Asn Gln Ala Phe Arg Tyr Glu Thr Ser Cys Ile Cys Ser Asp Val Leu
 705 710 715 720
 Asp Glu Leu His Gly Val Gln Ser Leu Phe Ser Trp Leu His Leu Thr
 725 730 735
 Ile Pro His Val Thr Ile Ile Cys Thr Tyr Arg His Ala Pro Pro Tyr
 740 745 750
 Ile Gly Asp His Ile Val Asp Leu Asn Asn Val Asp Glu Gln Ser Gly
 755 760 765
 Leu Tyr Arg Tyr His Met Gly Gly Ile Glu Gly Trp Cys Gln Lys Leu
 770 775 780
 Trp Thr Ile Glu Ala Ile Ser Leu Leu Asp Leu Ile Ser Leu Lys Gly
 785 790 795 800
 Lys Phe Ser Ile Thr Ala Leu Ile Asn Gly Asp Asn Gln Ser Ile Asp
 805 810 815
 Ile Ser Lys Pro Ile Arg Leu Met Glu Gly Gln Thr His Ala Gln Ala
 820 825 830
 Asp Tyr Leu Ala Leu Asn Ser Leu Lys Leu Tyr Lys Glu Tyr
 835 840 845
 Ala Gly Ile Gly His Lys Leu Lys Gly Thr Glu Thr Tyr Ile Ser Arg
 850 855 860
 Asp Met Gln Phe Met Ser Lys Thr Ile Gln His Asn Gly Val Tyr Tyr
 865 870 875 880
 Pro Ala Ser Ile Lys Lys Val Leu Arg Val Gly Pro Trp Ile Asn Thr
 885 890 895
 Ile Leu Asp Asp Phe Lys Val Ser Leu Glu Ser Ile Gly Ser Leu Thr
 900 905 910
 Gln Glu Leu Glu Tyr Arg Gly Glu Ser Leu Leu Cys Ser Leu Ile Phe
 915 920 925
 Arg Asn Val Trp Leu Tyr Asn Gln Ile Ala Leu Gln Leu Lys Asn His
 930 935 940
 Ala Leu Cys Asn Asn Lys Leu Tyr Leu Asp Ile Leu Lys Val Leu Lys
 945 950 955 960
 His Leu Lys Thr Phe Phe Asn Leu Asp Asn Ile Asp Thr Ala Leu Thr
 965 970 975
 Leu Tyr Met Asn Leu Pro Met Leu Phe Gly Gly Asp Pro Asn Leu
 980 985 990
 Leu Tyr Arg Ser Phe Tyr Arg Arg Thr Pro Asp Phe Leu Thr Glu Ala
 995 1000 1005
 Ile Val His Ser Val Phe Ile Leu Ser Tyr Tyr Thr Asn His Asp Leu
 1010 1015 1020
 Lys Asp Lys Leu Gln Asp Leu Ser Asp Asp Arg Leu Asn Lys Phe Leu
 1025 1030 1035 1040
 Thr Cys Ile Ile Thr Phe Asp Lys Asn Pro Asn Ala Glu Phe Val Thr
 1045 1050 1055
 Leu Met Arg Asp Pro Gln Ala Leu Gly Ser Glu Arg Gln Ala Lys Ile

1060	1065	1070
Thr Ser Glu Ile Asn Arg Leu Ala Val Thr Glu Val	Leu Ser Thr Ala	
1075	1080	1085
Pro Asn Lys Ile Phe Ser Lys Ser Ala Gln His Tyr	Thr Thr Thr Glu	
1090	1095	1100
Ile Asp Leu Asn Asp Ile Met Gln Asn Ile Glu Pro	Thr Tyr Pro His	
1105	1110	1115
Gly Leu Arg Val Val Tyr Glu Ser Leu Pro Phe	Tyr Lys Ala Glu Lys	
1125	1130	1135
Ile Val Asn Leu Ile Ser Gly Thr Lys Ser Ile Thr	Asn Ile Leu Glu	
1140	1145	1150
Lys Thr Ser Ala Ile Asp Leu Thr Asp Ile Asp Arg	Ala Thr Glu Met	
1155	1160	1165
Met Arg Lys Asn Ile Thr Leu Leu Ile Arg Ile Leu	Pro Leu Asp Cys	
1170	1175	1180
Asn Arg Asp Lys Arg Glu Ile Leu Ser Met Glu Asn	Leu Ser Ile Thr	
1185	1190	1195
Glu Leu Ser Lys Tyr Val Arg Glu Arg Ser Trp Ser	Leu Ser Asn Ile	
1205	1210	1215
Val Gly Val Thr Ser Pro Ser Ile Met Tyr Thr Met	Asp Ile Lys Tyr	
1220	1225	1230
Thr Thr Ser Thr Ile Ser Ser Gly Ile Ile Glu Lys	Tyr Asn Val	
1235	1240	1245
Asn Ser Leu Thr Arg Gly Glu Arg Gly Pro Thr	Lys Pro Trp Val Gly	
1250	1255	1260
Ser Ser Thr Gln Glu Lys Lys Thr Met Pro Val	Tyr Asn Arg Gln Val	
1265	1270	1275
Leu Thr Lys Lys Gln Arg Asp Gln Ile Asp Leu	Leu Ala Lys Leu Asp	
1285	1290	1295
Trp Val Tyr Ala Ser Ile Asp Asn Lys Asp Glu	Phe Met Glu Glu Leu	
1300	1305	1310
Ser Ile Gly Thr Leu Gly Leu Thr Tyr Glu Lys Ala	Lys Lys Leu Phe	
1315	1320	1325
Pro Gln Tyr Leu Ser Val Asn Tyr Leu His Arg	Leu Thr Val Ser Ser	
1330	1335	1340
Arg Pro Cys Glu Phe Pro Ala Ser Ile Pro Ala	Tyr Arg Thr Thr Asn	
1345	1350	1355
Tyr His Phe Asp Thr Ser Pro Ile Asn Arg Ile	Leu Thr Glu Lys Tyr	
1365	1370	1375
Gly Asp Glu Asp Ile Asp Ile Val Phe Gln Asn Cys	Ile Ser Phe Gly	
1380	1385	1390
Leu Ser Leu Met Ser Val Val Glu Gln Phe Thr	Asn Val Cys Pro Asn	
1395	1400	1405
Arg Ile Ile Leu Ile Pro Lys Leu Asn Glu Ile	His Leu Met Lys Pro	
1410	1415	1420
Pro Ile Phe Thr Gly Asp Val Asp Ile His Lys	Leu Lys Gln Val Ile	
1425	1430	1435
Gln Lys Gln His Met Phe Leu Pro Asp Lys Ile	Ser Leu Thr Gln Tyr	
1445	1450	1455
Val Glu Leu Phe Leu Ser Asn Lys Thr Leu Lys	Ser Gly Ser His Val	
1460	1465	1470
Asn Ser Asn Leu Ile Leu Ala His Lys Ile Ser Asp	Tyr Phe His Asn	
1475	1480	1485
Thr Tyr Ile Leu Ser Thr Asn Leu Ala Gly His	Trp Ile Leu Ile Ile	
1490	1495	1500
Gln Leu Met Lys Asp Ser Lys Gly Ile Phe Glu	Lys Asp Trp Gly Glu	
1505	1510	1515
Gly Tyr Ile Thr Asp His Met Phe Ile Asn Leu	Lys Val Phe Phe Asn	
1525	1530	1535
Ala Tyr Lys Thr Tyr Leu Leu Cys Phe His Lys	Gly Tyr Gly Lys Ala	
1540	1545	1550

Lys Leu Glu Cys Asp Met Asn Thr Ser Asp Leu Leu Cys Val Leu Glu
 1555 1560 1565
 Leu Ile Asp Ser Ser Tyr Trp Lys Ser Met Ser Lys Val Phe Leu Glu
 1570 1575 1580
 Gln Lys Val Ile Lys Tyr Ile Leu Ser Gln Asp Ala Ser Leu His Arg
 1585 1590 1595 1600
 Val Lys Gly Cys His Ser Phe Lys Leu Trp Phe Leu Lys Arg Leu Asn
 1605 1610 1615
 Val Ala Glu Phe Thr Val Cys Pro Trp Val Val Asn Ile Asp Tyr His
 1620 1625 1630
 Pro Thr His Met Lys Ala Ile Leu Thr Tyr Ile Asp Leu Val Arg Met
 1635 1640 1645
 Gly Leu Ile Asn Ile Asp Arg Ile His Ile Lys Asn Lys His Lys Phe
 1650 1655 1660
 Asn Asp Glu Phe Tyr Thr Ser Asn Leu Phe Tyr Ile Asn Tyr Asn Phe
 1665 1670 1675 1680
 Ser Asp Asn Thr His Leu Leu Thr Lys His Ile Arg Ile Ala Asn Ser
 1685 1690 1695
 Glu Leu Glu Asn Asn Tyr Asn Lys Leu Tyr His Pro Thr Pro Glu Thr
 1700 1705 1710
 Leu Glu Asn Ile Leu Ala Asn Pro Ile Lys Ser Asn Asp Lys Lys Thr
 1715 1720 1725
 Leu Asn Asp Tyr Cys Ile Gly Lys Asn Val Asp Ser Ile Met Leu Pro
 1730 1735 1740
 Leu Leu Ser Asn Lys Lys Leu Ile Lys Ser Ser Ala Met Ile Arg Thr
 1745 1750 1755 1760
 Asn Tyr Ser Lys Gln Asp Leu Tyr Asn Leu Phe Pro Met Val Val Ile
 1765 1770 1775
 Asp Arg Ile Ile Asp His Ser Gly Asn Thr Ala Lys Ser Asn Gln Leu
 1780 1785 1790
 Tyr Thr Thr Ser His Gln Ile Ser Leu Val His Asn Ser Thr Ser
 1795 1800 1805
 Leu Tyr Cys Met Leu Pro Trp His His Ile Asn Arg Phe Asn Phe Val
 1810 1815 1820
 Phe Ser Ser Thr Gly Cys Lys Ile Ser Ile Glu Tyr Ile Leu Lys Asp
 1825 1830 1835 1840
 Leu Lys Ile Lys Asp Pro Asn Cys Ile Ala Phe Ile Gly Glu Gly Ala
 1845 1850 1855
 Gly Asn Leu Leu Arg Thr Val Val Glu Leu His Pro Asp Ile Arg
 1860 1865 1870
 Tyr Ile Tyr Arg Ser Leu Lys Asp Cys Asn Asp His Ser Leu Pro Ile
 1875 1880 1885
 Glu Phe Leu Arg Leu Tyr Asn Gly His Ile Asn Ile Asp Tyr Gly Glu
 1890 1895 1900
 Asn Leu Thr Ile Pro Ala Thr Asp Ala Thr Asn Asn Ile His Trp Ser
 1905 1910 1915 1920
 Tyr Leu His Ile Lys Phe Ala Glu Pro Ile Ser Leu Phe Val Cys Asp
 1925 1930 1935
 Ala Glu Leu Ser Val Thr Val Asn Trp Ser Lys Ile Ile Glu Trp
 1940 1945 1950
 Ser Lys His Val Arg Lys Cys Lys Tyr Cys Ser Ser Val Asn Lys Cys
 1955 1960 1965
 Met Leu Ile Val Lys Tyr His Ala Gln Asp Asp Ile Asp Phe Lys Leu
 1970 1975 1980
 Asp Asn Ile Thr Ile Leu Lys Thr Tyr Val Cys Leu Gly Ser Lys Leu
 1985 1990 1995 2000
 Lys Gly Ser Glu Val Tyr Leu Val Leu Thr Ile Gly Pro Ala Asn Ile
 2005 2010 2015
 Phe Pro Val Phe Asn Val Val Gln Asn Ala Lys Leu Ile Leu Ser Arg
 2020 2025 2030
 Thr Lys Asn Phe Ile Met Pro Lys Lys Ala Asp Lys Glu Ser Ile Asp

2035	2040	2045	
Ala Asn Ile Lys Ser Leu Ile Pro Phe Leu Cys Tyr Pro Ile Thr Lys			
2050	2055	2060	
Lys Gly Ile Asn Thr Ala Leu Ser Lys Leu Lys Ser Val Val Ser Gly			
2065	2070	2075	2080
Asp Ile Leu Ser Tyr Ser Ile Ala Gly Arg Asn Glu Val Phe Ser Asn			
2085	2090	2095	
Lys Leu Ile Asn His Lys His Met Asn Ile Leu Lys Trp Phe Asn His			
2100	2105	2110	
Val Leu Asn Phe Arg Ser Thr Glu Leu Asn Tyr Asn His Leu Tyr Met			
2115	2120	2125	
Val Glu Ser Thr Tyr Pro Tyr Leu Ser Glu Leu Leu Asn Ser Leu Thr			
2130	2135	2140	
Thr Asn Glu Leu Lys Leu Ile Lys Ile Thr Gly Ser Leu Leu Tyr			
2145	2150	2155	2160
Asn Phe His Asn Glu			
2165			

<210> 394
 <211> 241
 <212> PRT
 <213> Human respiratory syncytial virus

<220>
 <223> phosphoprotein P of Human respiratory syncytial virus

<400> 394			
Met Glu Lys Phe Ala Pro Glu Phe His Gly Glu Asp Ala Asn Asn Arg			
1	5	10	15
Ala Thr Lys Phe Leu Glu Ser Ile Lys Gly Lys Phe Thr Ser Pro Lys			
20	25	30	
Asp Pro Lys Lys Asp Ser Ile Ile Ser Val Asn Ser Ile Asp Ile			
35	40	45	
Glu Val Thr Lys Glu Ser Pro Ile Thr Ser Asn Ser Thr Ile Met Asn			
50	55	60	
Pro Thr Asn Glu Thr Asp Asp Thr Val Gly Asn Lys Pro Asn Tyr Gln			
65	70	75	80
Arg Lys Pro Leu Val Ser Phe Lys Glu Asp Pro Met Leu Ser Asp Asn			
85	90	95	
Pro Phe Ser Lys Leu Tyr Lys Glu Thr Ile Glu Thr Phe Asp Asn Asn			
100	105	110	
Glu Glu Ser Ser Tyr Ser Tyr Glu Glu Ile Asn Asp Gln Thr Asn			
115	120	125	
Asp Asn Ile Thr Ala Arg Leu Asp Arg Ile Asp Glu Lys Leu Ser Glu			
130	135	140	
Ile Leu Gly Met Leu His Thr Leu Val Val Ala Ser Ala Gly Pro Thr			
145	150	155	160
Ser Ala Arg Asp Gly Ile Arg Asp Ala Met Val Gly Leu Arg Glu Glu			
165	170	175	
Met Ile Glu Lys Ile Arg Thr Glu Ala Leu Met Thr Asn Asn Arg Leu			
180	185	190	
Glu Ala Met Ala Arg Leu Arg Asn Glu Glu Ser Glu Lys Met Ala Lys			
195	200	205	
Asp Thr Ser Asp Glu Val Ser Leu Asn Pro Thr Ser Glu Lys Leu Asn			
210	215	220	
Asn Leu Leu Glu Gly Asn Asp Ser Asp Asp Asp Leu Ser Leu Glu Asp			
225	230	235	240
Phe			

<210> 395

<211> 83
<212> PRT
<213> Human respiratory syncytial virus

<220>
<223> attachment glycoprotein G of Human respiratory syncytial virus

<400> 395
Lys Arg Asp Pro Lys Thr Pro Ala Lys Met Leu Asn Lys Glu Thr Thr
1 5 10 15
Thr Asn Pro Thr Lys Asn Leu Thr Leu Lys Thr Thr Glu Arg Asp Thr
20 25 30
Ser Thr Ser Gln Ser Thr Val Leu Asp Thr Ser Thr Ser Lys His Ile
35 40 45
Ile Leu Gln Gln Ser Leu His Ser Thr Thr Pro Glu Asn Thr Pro Asn
50 55 60
Phe Thr Gln Thr Pro Thr Ala Ser Glu Pro Ser Thr Ser Asn Ser Thr
65 70 75 80
Gln Lys Thr

<210> 396
<211> 391
<212> PRT
<213> human respiratory syncytial virus (strain 18537)

<220>
<223> nucleocapsid protein of Human respiratory syncytial virus

<400> 396
Met Ala Leu Ser Lys Val Lys Leu Asn Asp Thr Leu Asn Lys Asp Gln
1 5 10 15
Leu Leu Ser Ser Ser Lys Tyr Thr Ile Gln Arg Ser Thr Gly Asp Asn
20 25 30
Ile Asp Thr Pro Asn Tyr Asp Val Gln Lys His Leu Asn Lys Leu Cys
35 40 45
Gly Met Leu Leu Ile Thr Glu Asp Ala Asn His Lys Phe Thr Gly Leu
50 55 60
Ile Gly Met Leu Tyr Ala Met Ser Arg Leu Gly Arg Glu Asp Thr Ile
65 70 75 80
Lys Ile Leu Lys Asp Ala Gly Tyr His Val Lys Ala Asn Gly Val Asp
85 90 95
Ile Thr Thr Tyr Arg Gln Asp Ile Asn Gly Lys Glu Met Lys Phe Glu
100 105 110
Val Leu Thr Leu Ser Ser Leu Thr Ser Glu Ile Gln Val Asn Ile Glu
115 120 125
Ile Glu Ser Arg Lys Ser Tyr Lys Lys Leu Leu Lys Glu Met Gly Glu
130 135 140
Val Ala Pro Glu Tyr Arg His Asp Ser Pro Asp Cys Gly Met Ile Ile
145 150 155 160
Leu Cys Ile Ala Ala Leu Val Ile Thr Lys Leu Ala Ala Gly Asp Arg
165 170 175
Ser Gly Leu Thr Ala Val Ile Arg Arg Ala Asn Asn Val Leu Lys Asn
180 185 190
Glu Ile Lys Arg Tyr Lys Gly Leu Ile Pro Lys Asp Ile Ala Asn Ser
195 200 205
Phe Tyr Glu Val Phe Glu Lys His Pro His Leu Ile Asp Val Phe Val
210 215 220
His Phe Gly Ile Ala Gln Ser Ser Thr Arg Gly Gly Ser Arg Val Glu
225 230 235 240

Gly Ile Phe Ala Gly Leu Phe Met Asn Ala Tyr Gly Ser Gly Gln Val
 245 250 255
 Met Leu Arg Trp Gly Val Leu Ala Lys Ser Val Lys Asn Ile Met Leu
 260 265 270
 Gly His Ala Ser Val Gln Ala Glu Met Glu Gln Val Val Glu Val Tyr
 275 280 285
 Glu Tyr Ala Gln Lys Leu Gly Gly Glu Ala Gly Phe Tyr His Ile Leu
 290 295 300
 Asn Asn Pro Lys Ala Ser Leu Leu Ser Leu Thr Gln Phe Pro Asn Phe
 305 310 315 320
 Ser Ser Val Val Leu Gly Asn Ala Ala Gly Leu Gly Ile Met Gly Glu
 325 330 335
 Tyr Arg Gly Thr Pro Arg Asn Gln Asp Leu Tyr Asp Ala Ala Lys Ala
 340 345 350
 Tyr Ala Glu Gln Leu Lys Glu Asn Gly Val Ile Asn Tyr Ser Val Leu
 355 360 365
 Asp Leu Thr Ala Glu Glu Leu Glu Ala Ile Lys His Gln Leu Asn Pro
 370 375 380
 Lys Glu Asp Asp Val Glu Leu
 385 390

<210> 397
 <211> 391
 <212> PRT
 <213> Human respiratory syncytial virus

<220>
 <223> nucleoprotein (N) of Human respiratory syncytial virus

<400> 397
 Met Ala Leu Ser Lys Val Lys Leu Asn Asp Thr Leu Asn Lys Asp Gln
 1 5 10 15
 Leu Leu Ser Ser Lys Tyr Thr Ile Gln Arg Ser Thr Gly Asp Ser
 20 25 30
 Ile Asp Thr Pro Asn Tyr Asp Val Gln Lys His Ile Asn Lys Leu Cys
 35 40 45
 Gly Met Leu Leu Ile Thr Glu Asp Ala Asn His Lys Phe Thr Gly Leu
 50 55 60
 Ile Gly Met Leu Tyr Ala Met Ser Arg Leu Gly Arg Glu Asp Thr Ile
 65 70 75 80
 Lys Ile Leu Arg Asp Ala Gly Tyr His Val Lys Ala Asn Gly Val Asp
 85 90 95
 Val Thr Thr His Arg Gln Asp Ile Asn Gly Lys Glu Met Lys Phe Glu
 100 105 110
 Val Leu Thr Leu Ser Ser Leu Thr Thr Glu Ile Gln Ile Asn Ile Glu
 115 120 125
 Ile Glu Ser Arg Lys Ser Tyr Lys Lys Met Leu Lys Glu Met Gly Glu
 130 135 140
 Val Ala Pro Glu Tyr Arg His Asp Ser Pro Asp Cys Gly Met Ile Ile
 145 150 155 160
 Leu Cys Ile Ala Ala Leu Val Ile Thr Lys Leu Ala Ala Gly Asp Arg
 165 170 175
 Ser Gly Leu Thr Ala Val Ile Arg Arg Ala Asn Asn Val Leu Lys Asn
 180 185 190
 Glu Met Lys Arg Tyr Lys Gly Leu Leu Pro Lys Asp Ile Ala Asn Ser
 195 200 205
 Phe Tyr Glu Val Phe Glu Lys Tyr Pro His Phe Ile Asp Val Phe Val
 210 215 220
 His Phe Gly Ile Ala Gln Ser Ser Thr Arg Gly Gly Ser Arg Val Glu
 225 230 235 240

Gly Ile Phe Ala Gly Leu Phe Met Asn Ala Tyr Gly Ala Gly Gln Val
 245 250 255
 Met Leu Arg Trp Gly Val Leu Ala Lys Ser Val Lys Asn Ile Met Leu
 260 265 270
 Gly His Ala Ser Val Gln Ala Glu Met Glu Gln Val Val Glu Val Tyr
 275 280 285
 Glu Tyr Ala Gln Lys Leu Gly Gly Glu Ala Gly Phe Tyr His Ile Leu
 290 295 300
 Asn Asn Pro Lys Ala Ser Leu Leu Ser Leu Thr Gln Phe Pro His Phe
 305 310 315 320
 Ser Ser Val Val Leu Gly Asn Ala Ala Gly Leu Gly Ile Met Gly Glu
 325 330 335
 Tyr Arg Gly Thr Pro Arg Asn Gln Asp Leu Tyr Asp Ala Ala Lys Ala
 340 345 350
 Tyr Ala Glu Gln Leu Lys Glu Asn Gly Val Ile Asn Tyr Ser Val Leu
 355 360 365
 Asp Leu Thr Ala Glu Glu Leu Glu Ala Ile Lys His Gln Leu Asn Pro
 370 375 380
 Lys Asp Asn Asp Val Glu Leu
 385 390

<210> 398
 <211> 256
 <212> PRT
 <213> Human respiratory syncytial virus

<220>
 <223>matrix protein of Human respiratory syncytial virus

<400> 398
 Met Glu Thr Tyr Val Asn Lys Leu His Glu Gly Ser Thr Tyr Thr Ala
 1 5 10 15
 Ala Val Gln Tyr Asn Val Leu Glu Lys Asp Asp Asp Pro Ala Ser Leu
 20 25 30
 Thr Ile Trp Val Pro Met Phe Gln Ser Ser Met Pro Ala Asp Leu Leu
 35 40 45
 Ile Lys Glu Leu Ala Asn Val Asn Ile Leu Val Lys Gln Ile Ser Thr
 50 55 60
 Pro Lys Gly Pro Ser Leu Arg Val Met Ile Asn Ser Arg Ser Ala Val
 65 70 75 80
 Leu Ala Gln Met Pro Ser Lys Phe Thr Ile Cys Ala Asn Val Ser Leu
 85 90 95
 Asp Glu Arg Ser Lys Leu Ala Tyr Asp Val Thr Thr Pro Cys Glu Ile
 100 105 110
 Lys Ala Cys Ser Leu Thr Cys Leu Lys Ser Lys Asn Met Leu Thr Thr
 115 120 125
 Val Lys Asp Leu Thr Met Lys Thr Leu Asn Pro Thr His Asp Ile Ile
 130 135 140
 Ala Leu Cys Glu Phe Glu Asn Ile Val Thr Ser Lys Lys Val Ile Ile
 145 150 155 160
 Pro Thr Tyr Leu Arg Ser Ile Ser Val Arg Asn Lys Asp Leu Asn Thr
 165 170 175
 Leu Glu Asn Ile Thr Thr Glu Phe Lys Asn Ala Ile Thr Asn Ala
 180 185 190
 Lys Ile Ile Pro Tyr Ser Gly Leu Leu Leu Val Ile Thr Val Thr Asp
 195 200 205
 Asn Lys Gly Ala Phe Lys Tyr Ile Lys Pro Gln Ser Gln Phe Ile Val
 210 215 220
 Asp Leu Gly Ala Tyr Leu Glu Lys Glu Ser Ile Tyr Tyr Val Thr Thr
 225 230 235 240

Asn	Trp	Lys	His	Thr	Ala	Thr	Arg	Phe	Ala	Ile	Lys	Pro	Met	Glu	Asp
245									250					255	

<210> 399
 <211> 1185
 <212> DNA
 <213> Human metapneumovirus

<220>
 <221> CDS
 <222> (1)...(1185)
 <223> Nucleoprotein (N)

<400> 399																	
atg	tct	ctt	caa	ggg	att	cac	ctg	agt	gat	tta	tca	tac	aag	cat	gct	48	
Met	Ser	Leu	Gln	Gly	Ile	His	Ile	Ser	Asp	Leu	Ser	Tyr	Lys	His	Ala		
1	5						10							15			
ata	tta	aaa	gag	tct	cag	tac	aca	ata	aaa	aga	gat	gtg	ggt	aca	aca	96	
Ile	Leu	Lys	Glu	Ser	Gln	Tyr	Thr	Ile	Lys	Arg	Asp	Val	Gly	Thr	Thr		
20							25						30				
act	gca	gtg	aca	ccc	tca	tca	ttg	caa	caa	gaa	ata	aca	ctg	ttg	tgt	144	
Thr	Ala	Val	Thr	Pro	Ser	Ser	Leu	Gln	Gln	Glu	Ile	Thr	Leu	Leu	Cys		
35							40					45					
gga	gaa	att	ctg	tat	gct	aaa	cat	gct	gac	tac	aaa	tat	gct	gca	gaa	192	
Gly	Glu	Ile	Leu	Tyr	Ala	Lys	His	Ala	Asp	Tyr	Lys	Tyr	Ala	Ala	Glu		
50						55					60						
ata	gga	ata	caa	tat	att	agc	aca	gct	tta	gga	tca	gag	aga	gtg	cag	240	
Ile	Gly	Ile	Gln	Tyr	Ile	Ser	Thr	Ala	Leu	Gly	Ser	Glu	Arg	Val	Gln		
65					70			75				80					
cag	att	ctg	agg	aac	tca	ggc	agt	gaa	gtc	caa	gtg	gtc	tta	acc	aga	288	
Gln	Ile	Leu	Arg	Asn	Ser	Gly	Ser	Glu	Val	Gln	Gln	Val	Val	Leu	Thr	Arg	
85						90					95						
acg	tac	tct	ctg	ggg	aaa	att	aaa	aac	aat	aaa	gga	gaa	gat	tta	cag	336	
Thr	Tyr	Ser	Leu	Gly	Ile	Lys	Asn	Asn	Lys	Gly	Glu	Asp	Leu	Gln			
100					105					110							
atg	tta	gac	ata	cac	ggg	gta	gag	aag	agc	tgg	gta	gaa	gag	ata	gac	384	
Met	Leu	Asp	Ile	His	Gly	Val	Glu	Lys	Ser	Trp	Val	Glu	Glu	Ile	Asp		
115					120			125									
aaa	gaa	gca	agg	aaa	aca	atg	gca	acc	ttg	ctt	aag	gaa	tca	tca	ggt	432	
Lys	Glu	Ala	Arg	Lys	Thr	Met	Ala	Thr	Leu	Leu	Lys	Glu	Ser	Ser	Gly		
130					135			140									
aat	atc	cca	caa	aat	cag	agg	ccc	tca	gca	cca	gac	aca	ccc	ata	atc	480	
Asn	Ile	Pro	Gln	Asn	Gln	Arg	Pro	Ser	Ala	Pro	Asp	Thr	Pro	Ile	Ile		
145					150			155				160					
tta	tta	tgt	gta	ggt	gcc	tta	ata	tto	act	aaa	cta	gca	tca	acc	ata	528	
Leu	Leu	Cys	Val	Gly	Ala	Leu	Ile	Phe	Thr	Lys	Leu	Ala	Ser	Thr	Ile		
165					170			175									
gaa	gtg	gga	cta	gag	acc	aca	gtc	aga	agg	gct	aac	cgt	gta	cta	agt	576	
Glu	Val	Gly	Leu	Glu	Thr	Thr	Val	Arg	Arg	Ala	Asn	Arg	Val	Leu	Ser		
180					185			190									
gat	gca	ctc	aag	aga	tac	cct	aga	atg	gac	ata	cca	aag	att	gcc	aga	624	
Asp	Ala	Leu	Lys	Arg	Tyr	Pro	Arg	Met	Asp	Ile	Pro	Lys	Ile	Ala	Arg		
195					200			205									
tcc	tcc	tat	gac	tta	ttt	gaa	caa	aaa	gtg	tat	cac	aga	agt	ttg	ttc	672	
Ser	Phe	Tyr	Asp	Leu	Phe	Glu	Gln	Lys	Val	Tyr	His	Arg	Ser	Leu	Phe		
210					215			220									
att	gag	tat	ggc	aaa	gca	tta	ggc	tca	tca	tct	aca	ggc	agc	aaa	gca	720	
Ile	Glu	Tyr	Gly	Lys	Ala	Leu	Gly	Ser	Ser	Ser	Thr	Gly	Ser	Lys	Ala		
225					230			235				240					
gaa	agt	cta	ttt	gtt	aat	ata	tto	atg	caa	gct	tat	ggg	gcc	ggt	caa	768	

Glu Ser Leu Phe Val Asn Ile Phe Met Gln Ala Tyr Gly Ala Gly Gln			
245	250	255	
aca atg cta agg tgg ggg gtc att gcc agg tca tcc aac aat ata atg			816
Thr Met Leu Arg Trp Gly Val Ile Ala Arg Ser Ser Asn Asn Ile Met			
260	265	270	
tta gga cat gta tcc gtc caa gct gag tta aaa cag gtc aca gaa gtc			864
Leu Gly His Val Ser Val Gln Ala Glu Leu Lys Gln Val Thr Glu Val			
275	280	285	
tat gac ttg gtg cga gaa atg ggc cct gaa tct gga ctt cta cat tta			912
Tyr Asp Leu Val Arg Glu Met Gly Pro Glu Ser Gly Leu Leu His Leu			
290	295	300	
agg caa agc cca aaa gct gga ctg tta tca cta gcc aac tgt ccc aac			960
Arg Gln Ser Pro Lys Ala Gly Leu Leu Ser Leu Ala Asn Cys Pro Asn			
305	310	315	320
ttt gca agt gtt gtt ctc gga aat gcc tca ggc tta ggc ata atc ggt			1008
Phe Ala Ser Val Val Leu Gly Asn Ala Ser Gly Leu Gly Ile Ile Gly			
325	330	335	
atg tat cga ggg aga gta cca aac aca gaa tta ttt tca gca gct gaa			1056
Met Tyr Arg Gly Arg Val Pro Asn Thr Glu Leu Phe Ser Ala Ala Glu			
340	345	350	
agt tat gcc aaa agt ttg aaa gaa agc aat aaa ata aat ttc tct tca			1104
Ser Tyr Ala Lys Ser Leu Lys Glu Ser Asn Lys Ile Asn Phe Ser Ser			
355	360	365	
tta gga ctt aca gat gaa gag aaa gag gct gca gaa cat ttc tta aat			1152
Leu Gly Leu Thr Asp Glu Glu Lys Glu Ala Ala Glu His Phe Leu Asn			
370	375	380	
gtg agt gac gac agt caa aat gat tat gag taa			1185
Val Ser Asp Asp Ser Gln Asn Asp Tyr Glu *			
385	390		

<210> 400

<211> 885

<212> DNA

<213> Human metapneumovirus

<220>

<221> CDS

<222> (1)...(885)

<223> Phosphoprotein (P)

<400> 400

atg tca ttc cct gaa gga aaa gat att ctt ttc atg ggt aat gaa gca			
Met Ser Phe Pro Glu Gly Lys Asp Ile Leu Phe Met Gly Asn Glu Ala			
1	5	10	15

48

gca aaa tta gca gaa gct ttc cag aaa tca tta aga aaa cca ggt cat			
Ala Lys Leu Ala Glu Ala Phe Gln Lys Ser Leu Arg Lys Pro Gly His			
20	25	30	

96

aaa aga tct caa tct att ata gga gaa aaa gtg aat act gta tca gaa			
Lys Arg Ser Gln Ser Ile Ile Gly Glu Lys Val Asn Thr Val Ser Glu			
35	40	45	

144

aca ttg gaa tta cct act atc agt aga cct gca aaa cca acc ata ccg			
Thr Leu Glu Leu Pro Thr Ile Ser Arg Pro Ala Lys Pro Thr Ile Pro			
50	55	60	

192

tca gaa cca aag tta gca tgg aca gat aaa ggt ggg gca acc aaa act			
Ser Glu Pro Lys Leu Ala Trp Thr Asp Lys Gly Gly Ala Thr Lys Thr			
65	70	75	80

240

gaa ata aag caa gca atc aaa gtc atg gat ccc att gaa gaa gaa gag			
Glu Ile Lys Gln Ala Ile Lys Val Met Asp Pro Ile Glu Glu Glu			
85	90	95	

288

tct acc gag aag aag gtg cta ccc tcc agt gat ggg aaa acc cct gca			
Ser Thr Glu Lys Lys Val Leu Pro Ser Ser Asp Gly Lys Thr Pro Ala			
336			

100	105	110	
gaa aag aaa ctg aaa cca tca act aac acc aaa aag aag gtt tca ttt			384
Glu Lys Lys Leu Lys Pro Ser Thr Asn Thr Lys Lys Val Ser Phe			
115	120	125	
aca cca aat gaa cca ggg aaa tat aca aag ttg gaa aaa gat gct cta			432
Thr Pro Asn Glu Pro Gly Lys Tyr Thr Lys Leu Glu Lys Asp Ala Leu			
130	135	140	
gat ttg ctc tca gat aat gaa gaa gat gca gaa tct tca atc tta			480
Asp Leu Leu Ser Asp Asn Glu Glu Asp Ala Glu Ser Ser Ile Leu			
145	150	155	160
acc ttt gaa gaa aga gat act tca tca tta agc att gag gcc aga ttg			528
Thr Phe Glu Glu Arg Asp Thr Ser Ser Leu Ser Ile Glu Ala Arg Leu			
165	170	175	
gaa tca ata gag gag aaa tta agc atg ata tta ggg cta tta aga aca			576
Glu Ser Ile Glu Glu Lys Leu Ser Met Ile Leu Gly Leu Leu Arg Thr			
180	185	190	
ctc aac att gct aca gca gga ccc aca gca gca aga gat ggg atc aga			624
Leu Asn Ile Ala Thr Ala Gly Pro Thr Ala Ala Arg Asp Gly Ile Arg			
195	200	205	
gat gca atg att ggc gta aga gag gaa tta ata gca gac ata ata aag			672
Asp Ala Met Ile Gly Val Arg Glu Glu Leu Ile Ala Asp Ile Ile Lys			
210	215	220	
gaa gct aaa ggg aaa gca gca gaa atg atg gaa gag gaa atg agt caa			720
Glu Ala Lys Gly Lys Ala Ala Glu Met Met Glu Glu Glu Met Ser Gln			
225	230	235	240
cga tca aaa ata gga aat ggt agt gta aaa tta aca gaa aaa gca aaa			768
Arg Ser Lys Ile Gly Asn Gly Ser Val Lys Leu Thr Glu Lys Ala Lys			
245	250	255	
gag ctc aac aaa att gtt gaa gat gaa agc aca agt gga gaa tcc gaa			816
Glu Leu Asn Lys Ile Val Glu Asp Glu Ser Thr Ser Gly Glu Ser Glu			
260	265	270	
gaa gaa gaa gaa cca aaa gac aca caa gac aat agt caa gaa gat gac			864
Glu Glu Glu Glu Pro Lys Asp Thr Gln Asp Asn Ser Gln Glu Asp Asp			
275	280	285	
att tac cag tta att atg tag			885
Ile Tyr Gln Leu Ile Met *			
290			

<210> 401
<211> 765
<212> DNA
<213> Human metapneumovirus

<220>
<221> CDS
<222> (1)...(765)
<223> Matrix Protein (M)

<400> 401			
atg gag tcc tac cta gta gac acc tat caa ggc att cct tac aca gca			48
Met Glu Ser Tyr Leu Val Asp Thr Tyr Gln Gly Ile Pro Tyr Thr Ala			
1	5	10	15
gct gtt caa gtt gat cta ata gaa aag gac ctg tta cct gca agc cta			96
Ala Val Gln Val Asp Leu Ile Glu Lys Asp Leu Leu Pro Ala Ser Leu			
20	25	30	
aca ata tgg ttc cct ttg ttt cag gcc aac aca cca cca gca gtg ctg			144
Thr Ile Trp Phe Pro Leu Phe Gln Ala Asn Thr Pro Pro Ala Val Leu			
35	40	45	
ctc gat cag cta aaa acc ctg aca ata acc act ctg tat gct gca tca			192
Leu Asp Gln Leu Lys Thr Leu Thr Ile Thr Thr Leu Tyr Ala Ala Ser			

50	55	60	
caa aat ggt cca ata ctc aaa gtg aat gca tca gcc caa ggt gca gca			240
Gln Asn Gly Pro Ile Leu Lys Val Asn Ala Ser Ala Gln Gly Ala Ala			
65	70	75	80
atg tct gta ctt ccc aaa aaa ttt gaa gtc aat gcg act gta gca ctc			288
Met Ser Val Leu Pro Lys Lys Phe Glu Val Asn Ala Thr Val Ala Leu			
85	90	95	
gat gaa tat agc aaa ctg gaa ttt gac aaa ctc aca gtc tgt gaa gta			336
Asp Glu Tyr Ser Lys Leu Glu Phe Asp Lys Leu Thr Val Cys Glu Val			
100	105	110	
aaa aca gtt tac tta aca acc atg aaa cca tac ggg atg gta tca aaa			384
Lys Thr Val Tyr Leu Thr Thr Met Lys Pro Tyr Gly Met Val Ser Lys			
115	120	125	
ttt gtg agc tca gcc aaa tca gtt ggc aaa aaa aca cat gat cta atc			432
Phe Val Ser Ser Ala Lys Ser Val Gly Lys Lys Thr His Asp Leu Ile			
130	135	140	
gca cta tgt gat ttt atg gat cta gaa aag aac aca cct gtt aca ata			480
Ala Leu Cys Asp Phe Met Asp Leu Glu Lys Asn Thr Pro Val Thr Ile			
145	150	155	160
cca gca ttc atc aaa tca gtt tca atc aaa gag agt gag tca gct act			528
Pro Ala Phe Ile Lys Ser Val Ser Ile Lys Glu Ser Glu Ser Ala Thr			
165	170	175	
gtt gaa gct gct ata agc agt gaa gca gac caa gct cta aca cag gcc			576
Val Glu Ala Ala Ile Ser Ser Glu Ala Asp Gln Ala Leu Thr Gln Ala			
180	185	190	
aaa att gca cct tat gcg gga tta att atg atc atg act atg aac aat			624
Lys Ile Ala Pro Tyr Ala Gly Leu Ile Met Ile Met Thr Met Asn Asn			
195	200	205	
ccc aaa ggc ata ttc aaa aag ctt gga gct ggg act caa gtc ata gta			672
Pro Lys Gly Ile Phe Lys Lys Leu Gly Ala Gly Thr Gln Val Ile Val			
210	215	220	
gaa cta gga gca tat gtc cag gct gaa agc ata agc aaa ata tgc aag			720
Glu Leu Gly Ala Tyr Val Gln Ala Glu Ser Ile Ser Lys Ile Cys Lys			
225	230	235	240
act tgg agc cat caa ggg aca aga tat gtc ttg aag tcc aga taa			765
Thr Trp Ser His Gln Gly Thr Arg Tyr Val Leu Lys Ser Arg *			
245	250		

<210> 402

<211> 564

<212> DNA

<213> Human metapneumovirus

<220>

<221> CDS

<222> (1)...(564)

<223> Matrix Protein 2-1 (M2)

<400> 402

atg tct cgc aag gct ccg tgc aaa tat gaa gtg cgg ggc aaa tgc aat			
Met Ser Arg Lys Ala Pro Cys Lys Tyr Glu Val Arg Gly Lys Cys Asn			
1	5	10	15

aga gga agt gag tgc aag ttt aac cac aat tac tgg agt tgg cca gat			
Arg Gly Ser Glu Cys Lys Phe Asn His Asn Tyr Trp Ser Trp Pro Asp			
20	25	30	

aga tac tta tta ata aga tca aat tat tta tta aat caa ctt tta agg			
Arg Tyr Leu Leu Ile Arg Ser Asn Tyr Leu Leu Asn Gln Leu Leu Arg			
35	40	45	

aac act gat aga gct gat ggc tta tca ata ata tca gga gca ggc aga			
Asn Thr Asp Arg Ala Asp Gly Leu Ser Ile Ile Ser Gly Ala Gly Arg			
50	55	60	

gaa gat agg aca caa gat ttt gtc cta ggt tcc acc aat gtg gtt caa	240
Glu Asp Arg Thr Gln Asp Phe Val Leu Gly Ser Thr Asn Val Val Gln	
65 70 75 80	
ggt tat att gat gat aac caa agc ata aca aaa gct gca gcc tgt tac	288
Gly Tyr Ile Asp Asp Asn Gln Ser Ile Thr Lys Ala Ala Ala Cys Tyr	
85 90 95	
agt cta cat aat ata atc aaa caa cta caa gaa gtt gaa gtt agg cag	336
Ser Leu His Asn Ile Ile Lys Gln Leu Gln Glu Val Glu Val Arg Gln	
100 105 110	
gct aga gat aac aaa cta tct gac agc aaa cat gta gca ctt cac aac	384
Ala Arg Asp Asn Lys Leu Ser Asp Ser Lys His Val Ala Leu His Asn	
115 120 125	
tta gtc cta tct tat atg gag atg agc aaa act cct gca tct tta atc	432
Leu Val Leu Ser Tyr Met Glu Met Ser Lys Thr Pro Ala Ser Leu Ile	
130 135 140	
aac aat ctc aag aga ctg ccg aga gag aaa ctg aaa aaa tta gca aag	480
Asn Asn Leu Lys Arg Leu Pro Arg Glu Lys Leu Lys Lys Leu Ala Lys	
145 150 155 160	
ctc ata att gac tta tca gca ggt gct gaa aat gac tct tca tat gcc	528
Leu Ile Ile Asp Leu Ser Ala Gly Ala Glu Asn Asp Ser Ser Tyr Ala	
165 170 175	
ttg caa gac agt gaa agc act aat caa gtg cag tga	
Leu Gln Asp Ser Glu Ser Thr Asn Gln Val Gln *	564
180 185	

<210> 403	
<211> 216	
<212> DNA	
<213> Human metapneumovirus	
<220>	
<221> CDS	
<222> (1) ... (216)	
<223> Matrix Protein 2-2 (M2)	
<400> 403	
atg act ctt cat atg cct tgc aag aca gtg aaa gca cta atc aag tgc	48
Met Thr Leu His Met Pro Cys Lys Thr Val Lys Ala Leu Ile Lys Cys	
1 5 10 15	
agt gag cat ggt cca gtt ttc att act ata gag gtt gat gac atg ata	96
Ser Glu His Gly Pro Val Phe Ile Thr Ile Glu Val Asp Asp Met Ile	
20 25 30	
tgg act cac aag gac tta aaa gaa gct tta tct gat ggg ata gtg aag	144
Trp Thr His Lys Asp Leu Lys Glu Ala Leu Ser Asp Gly Ile Val Lys	
35 40 45	
tct cat act aac att tac aat tgt tat tta gaa aac ata gaa att ata	192
Ser His Thr Asn Ile Tyr Asn Cys Tyr Leu Glu Asn Ile Glu Ile Ile	
50 55 60	
tat gtc aag gct tac tta agt tag	216
Tyr Val Lys Ala Tyr Leu Ser *	
65 70	
<210> 404	
<211> 552	
<212> DNA	
<213> Human metapneumovirus	
<220>	
<221> CDS	
<222> (1) ... (552)	

<223> Small Hydrophobic Protein (SH)

<400> 404

atg ata aca tta gat gtc att aaa agt gat ggg tct tca aaa aca tgt	48
Met Ile Thr Leu Asp Val Ile Lys Ser Asp Gly Ser Ser Lys Thr Cys	
1 5 10 15	
act cac ctc aaa aaa ata att aaa gac cac tct ggt aaa gtg ctt att	96
Thr His Leu Lys Ile Ile Lys Asp His Ser Gly Lys Val Leu Ile	
20 25 30	
gta ctt aag tta ata tta gct tta cta aca ttt ctc aca gta aca atc	144
Val Leu Lys Leu Ile Leu Ala Leu Leu Thr Phe Leu Thr Val Thr Ile	
35 40 45	
acc atc aat tat ata aaa gtg gaa aac aat ctg caa ata tgc cag tca	192
Thr Ile Asn Tyr Ile Lys Val Glu Asn Asn Leu Gln Ile Cys Gln Ser	
50 55 60	
aaa act gaa tca gac aaa aag gac tca tca aat acc aca tca gtc	240
Lys Thr Glu Ser Asp Lys Lys Asp Ser Ser Asn Thr Thr Ser Val	
65 70 75 80	
aca acc aag act act cta aat cat gat atc aca cag tat ttt aaa agt	288
Thr Thr Lys Thr Leu Asn His Asp Ile Thr Gln Tyr Phe Lys Ser	
85 90 95	
ttg att caa agg tat aca aac tct gca ata aac agt gac aca tgc tgg	336
Leu Ile Gln Arg Tyr Thr Asn Ser Ala Ile Asn Ser Asp Thr Cys Trp	
100 105 110	
aaa ata aac aga aat caa tgc aca aat ata aca aca tac aaa ttt tta	384
Lys Ile Asn Arg Asn Gln Cys Thr Asn Ile Thr Thr Tyr Lys Phe Leu	
115 120 125	
tgt ttt aaa tct gaa gac aca aaa acc aac aat tgt gat aaa ctg aca	432
Cys Phe Lys Ser Glu Asp Thr Lys Thr Asn Asn Cys Asp Lys Leu Thr	
130 135 140	
gat tta tgc aga aac aaa cca aaa cca gca gtt gga gtg tat cac ata	480
Asp Leu Cys Arg Asn Lys Pro Lys Pro Ala Val Gly Val Tyr His Ile	
145 150 155 160	
gta gaa tgc cat tgt ata tac aca gtt aaa tgg aag tgc tat cat tac	528
Val Glu Cys His Cys Ile Tyr Thr Val Lys Trp Lys Cys Tyr His Tyr	
165 170 175	
cca acc gat gaa acc caa tcc taa	552
Pro Thr Asp Glu Thr Gln Ser *	
180	

<210> 405

<211> 2005

<212> PRT

<213> Human metapneumovirus

<220>

<223> RNA-dependent RNA polymerase (L) of Human metapneumovirus

<400> 405

Met Asp Pro Leu Asn Glu Ser Thr Val Asn Val Tyr Leu Pro Asp Ser	
1 5 10 15	
Tyr Leu Lys Gly Val Ile Ser Phe Ser Glu Thr Asn Ala Ile Gly Ser	
20 25 30	
Cys Leu Leu Lys Arg Pro Tyr Leu Lys Asn Asp Asn Thr Ala Lys Val	
35 40 45	
Ala Ile Glu Asn Pro Val Ile Glu His Val Arg Leu Lys Asn Ala Val	
50 55 60	
Asn Ser Lys Met Lys Ile Ser Asp Tyr Lys Ile Val Glu Pro Val Asn	
65 70 75 80	
Met Gln His Glu Ile Met Lys Asn Val His Ser Cys Glu Leu Thr Leu	

85	90	95
Leu Lys Gln Phe Leu Thr Arg Ser Lys	Asn Ile Ser Thr	Leu Lys Leu
100	105	110
Asn Met Ile Cys Asp Trp Leu Gln Leu Lys Ser Thr	Ser Asp Asp Thr	
115	120	125
Ser Ile Leu Ser Phe Ile Asp Val Glu Phe Ile Pro	Ser Trp Val Ser	
130	135	140
Asn Trp Phe Ser Asn Trp Tyr Asn Leu Asn	Lys Leu Ile Leu Glu Phe	
145	150	155
Arg Lys Glu Glu Val Ile Arg Thr Gly Ser	Ile Leu Cys Arg Ser	Leu
165	170	175
Gly Lys Leu Val Phe Val Val Ser Ser	Tyr Gly Cys Ile Val Lys Ser	
180	185	190
Asn Lys Ser Lys Arg Val Ser Phe Phe Thr Tyr Asn	Gln Leu Leu Thr	
195	200	205
Trp Lys Asp Val Met Leu Ser Arg Phe Asn Ala	Asn Phe Cys Ile Trp	
210	215	220
Val Ser Asn Ser Leu Asn Glu Asn Gln Glu	Gly Leu Gly Leu Arg Ser	
225	230	235
Asn Leu Gln Gly Ile Leu Thr Asn Lys	Leu Tyr Glu Thr Val Asp Tyr	
245	250	255
Met Leu Ser Leu Cys Cys Asn Glu Gly Phe Ser	Leu Val Lys Glu Phe	
260	265	270
Glu Gly Phe Ile Met Ser Glu Ile Leu Arg Ile Thr	Glu His Ala Gln	
275	280	285
Phe Ser Thr Arg Phe Arg Asn Thr Leu Leu Asn	Gly Leu Thr Asp Gln	
290	295	300
Leu Thr Lys Leu Lys Asn Lys Arg Leu Arg Val	His Gly Thr Val	
305	310	315
Leu Glu Asn Asn Asp Tyr Pro Met Tyr	Glu Val Val Leu Lys Leu	
325	330	335
Gly Asp Thr Leu Arg Cys Ile Lys Leu Leu Ile Asn	Lys Asn Leu Glu	
340	345	350
Asn Ala Ala Glu Leu Tyr Tyr Ile Phe Arg Ile	Phe Gly His Pro Met	
355	360	365
Val Asp Glu Arg Asp Ala Met Asp Ala Val Lys	Leu Asn Asn Glu Ile	
370	375	380
Thr Lys Ile Leu Arg Trp Glu Ser Leu Thr	Glu Leu Arg Gly Ala Phe	
385	390	395
Ile Leu Arg Ile Ile Lys Gly Phe Val Asp Asn	Asn Lys Arg Trp Pro	
405	410	415
Lys Ile Lys Asn Leu Lys Val Leu Ser Lys Arg	Trp Thr Met Tyr Phe	
420	425	430
Lys Ala Lys Ser Tyr Pro Ser Gln Leu Glu	Leu Ser Gln Gln Asp Phe	
435	440	445
Leu Glu Leu Ala Ala Ile Gln Phe Glu Gln Glu	Phe Ser Val Pro Glu	
450	455	460
Lys Thr Asn Leu Glu Met Val Leu Asn Asp	Lys Ala Ile Ser Pro Pro	
465	470	475
Lys Arg Leu Ile Trp Ser Val Tyr Pro	Lys Asn Tyr Leu Pro Glu Lys	
485	490	495
Ile Lys Asn Arg Tyr Leu Glu Glu	Thr Phe Asn Ala Ser Asp Ser	Leu
500	505	510
Lys Thr Arg Arg Val Leu Glu Tyr Tyr Leu Lys	Asp Asn Lys Phe Asp	
515	520	525
Gln Lys Glu Leu Lys Ser Tyr Val Val Lys	Gln Glu Tyr Leu Asn Asp	
530	535	540
Lys Asp His Ile Val Ser Leu Thr Gly Lys	Glu Arg Glu Leu Ser Val	
545	550	555
Gly Arg Met Phe Ala Met Gln Pro Gly	Lys Gln Arg Gln Ile Gln Ile	
565	570	575

Leu Ala Glu Lys Leu Leu Ala Asp Asn Ile Val Pro Phe Phe Pro Glu
 580 585 590
 Thr Leu Thr Lys Tyr Gly Asp Leu Asp Leu Gln Arg Ile Met Glu Ile
 595 600 605
 Lys Ser Glu Leu Ser Ser Ile Lys Thr Arg Arg Asn Asp Ser Tyr Asn
 610 615 620
 Asn Tyr Ile Ala Arg Ala Ser Ile Val Thr Asp Leu Ser Lys Phe Asn
 625 630 635 640
 Gln Ala Phe Arg Tyr Glu Thr Thr Ala Ile Cys Ala Asp Val Ala Asp
 645 650 655
 Glu Leu His Gly Thr Gln Ser Leu Phe Cys Trp Leu His Leu Ile Val
 660 665 670
 Pro Met Thr Thr Met Ile Cys Ala Tyr Arg His Ala Pro Pro Glu Thr
 675 680 685
 Lys Gly Glu Tyr Asp Ile Asp Lys Ile Glu Glu Gln Ser Gly Leu Tyr
 690 695 700
 Arg Tyr His Met Gly Gly Ile Glu Gly Trp Cys Gln Lys Leu Trp Thr
 705 710 715 720
 Met Glu Ala Ile Ser Leu Leu Asp Val Val Ser Val Lys Thr Arg Cys
 725 730 735
 Gln Met Thr Ser Leu Leu Asn Gly Asp Asn Gln Ser Ile Asp Val Ser
 740 745 750
 Lys Pro Val Lys Leu Ser Glu Gly Leu Asp Glu Val Lys Ala Asp Tyr
 755 760 765
 Ser Leu Ala Val Lys Met Leu Lys Glu Ile Arg Asp Ala Tyr Arg Asn
 770 775 780
 Ile Gly His Lys Leu Lys Glu Gly Glu Thr Tyr Ile Ser Arg Asp Leu
 785 790 795 800
 Gln Phe Ile Ser Lys Val Ile Gln Ser Glu Gly Val Met His Pro Thr
 805 810 815
 Pro Ile Lys Ile Leu Arg Val Gly Pro Trp Ile Asn Thr Ile Leu
 820 825 830
 Asp Asp Ile Lys Thr Ser Ala Glu Ser Ile Gly Ser Leu Cys Gln Glu
 835 840 845
 Leu Glu Phe Arg Gly Glu Ser Ile Ile Val Ser Leu Ile Leu Arg Asn
 850 855 860
 Phe Trp Leu Tyr Asn Leu Tyr Met His Glu Ser Lys Gln His Pro Leu
 865 870 875 880
 Ala Gly Lys Gln Leu Phe Lys Gln Leu Asn Lys Thr Leu Thr Ser Val
 885 890 895
 Gln Arg Phe Phe Glu Ile Lys Lys Glu Asn Glu Val Val Asp Leu Trp
 900 905 910
 Met Asn Ile Pro Met Gln Phe Gly Gly Asp Pro Val Val Phe Tyr
 915 920 925
 Arg Ser Phe Tyr Arg Arg Thr Pro Asp Phe Leu Thr Glu Ala Ile Ser
 930 935 940
 His Val Asp Ile Leu Leu Arg Ile Ser Ala Asn Ile Arg Asn Glu Ala
 945 950 955 960
 Lys Ile Ser Phe Phe Lys Ala Leu Leu Ser Ile Glu Lys Asn Glu Arg
 965 970 975
 Ala Thr Leu Thr Thr Leu Met Arg Asp Pro Gln Ala Val Gly Ser Glu
 980 985 990
 Arg Gln Ala Lys Val Thr Ser Asp Ile Asn Arg Thr Ala Val Thr Ser
 995 1000 1005
 Ile Leu Ser Leu Ser Pro Asn Gln Leu Phe Ser Asp Ser Ala Ile His
 1010 1015 1020
 Tyr Ser Arg Asn Glu Glu Val Gly Ile Ile Ala Asp Asn Ile Thr
 1025 1030 1035 1040
 Pro Val Tyr Pro His Gly Leu Arg Val Leu Tyr Glu Ser Leu Pro Phe
 1045 1050 1055
 His Lys Ala Glu Lys Val Val Asn Met Ile Ser Gly Thr Lys Ser Ile

1060	1065	1070
Thr Asn Leu Leu Gln Arg Thr Ser Ala Ile Asn Gly Glu Asp Ile Asp		
1075	1080	1085
Arg Ala Val Ser Met Met Leu Glu Asn Leu Gly Leu Leu Ser Arg Ile		
1090	1095	1100
Leu Ser Val Val Val Asp Ser Ile Glu Ile Pro Thr Lys Ser Asn Gly		
1105	1110	1115
Arg Leu Ile Cys Cys Gln Ile Ser Arg Thr Leu Arg Glu Thr Ser Trp		
1125	1130	1135
Asn Asn Met Glu Ile Val Gly Val Thr Ser Pro Ser Ile Thr Thr Cys		
1140	1145	1150
Met Asp Val Ile Tyr Ala Thr Ser Ser His Leu Lys Gly Ile Ile Ile		
1155	1160	1165
Glu Lys Phe Ser Thr Asp Arg Thr Thr Arg Gly Gln Arg Gly Pro Lys		
1170	1175	1180
Ser Pro Trp Val Gly Ser Ser Thr Gln Glu Lys Lys Leu Val Pro Val		
1185	1190	1195
Tyr Asn Arg Gln Ile Leu Ser Lys Gln Gln Arg Glu Gln Leu Glu Ala		
1205	1210	1215
Ile Gly Lys Met Arg Trp Val Tyr Lys Gly Thr Pro Gly Leu Arg Arg		
1220	1225	1230
Leu Leu Asn Lys Ile Cys Leu Gly Ser Leu Gly Ile Ser Tyr Lys Cys		
1235	1240	1245
Val Lys Pro Leu Leu Pro Arg Phe Met Ser Val Asn Phe Leu His Arg		
1250	1255	1260
Leu Ser Val Ser Ser Arg Pro Met Glu Phe Pro Ala Ser Val Pro Ala		
1265	1270	1275
Tyr Arg Thr Thr Asn Tyr His Phe Asp Thr Ser Pro Ile Asn Gln Ala		
1285	1290	1295
Leu Ser Glu Arg Phe Gly Asn Glu Asp Ile Asn Leu Val Phe Gln Asn		
1300	1305	1310
Ala Ile Ser Cys Gly Ile Ser Ile Met Ser Val Val Glu Gln Leu Thr		
1315	1320	1325
Gly Arg Ser Pro Lys Gln Leu Val Leu Ile Pro Gln Leu Glu Glu Ile		
1330	1335	1340
Asp Ile Met Pro Pro Pro Val Phe Gln Gly Lys Phe Asn Tyr Lys Leu		
1345	1350	1355
Val Asp Lys Ile Thr Ser Asp Gln His Ile Phe Ser Pro Asp Lys Ile		
1365	1370	1375
Asp Met Leu Thr Leu Gly Lys Met Leu Met Pro Thr Ile Lys Gly Gln		
1380	1385	1390
Lys Thr Asp Gln Phe Leu Asn Lys Arg Glu Asn Tyr Phe His Gly Asn		
1395	1400	1405
Asn Leu Ile Glu Ser Leu Ser Ala Ala Leu Ala Cys His Trp Cys Gly		
1410	1415	1420
Ile Leu Thr Glu Gln Cys Ile Glu Asn Asn Ile Phe Lys Lys Asp Trp		
1425	1430	1435
Gly Asp Gly Phe Ile Ser Asp His Ala Phe Met Asp Phe Lys Ile Phe		
1445	1450	1455
Leu Cys Val Phe Lys Thr Lys Leu Leu Cys Ser Trp Gly Ser Gln Gly		
1460	1465	1470
Lys Asn Ile Lys Asp Glu Asp Ile Val Asp Glu Ser Ile Asp Lys Leu		
1475	1480	1485
Leu Arg Ile Asp Asn Thr Phe Trp Arg Met Phe Ser Lys Val Met Phe		
1490	1495	1500
Glu Ser Lys Val Lys Lys Arg Ile Met Leu Tyr Asp Val Lys Phe Leu		
1505	1510	1515
Ser Leu Val Gly Tyr Ile Gly Phe Lys Asn Trp Phe Ile Glu Gln Leu		
1525	1530	1535
Arg Ser Ala Glu Leu His Glu Val Pro Trp Ile Val Asn Ala Glu Gly		
1540	1545	1550

Asp Leu Val Glu Ile Lys Ser Ile Lys Ile Tyr Leu Gln Leu Ile Glu
 1555 1560 1565
 Gln Ser Leu Phe Leu Arg Ile Thr Val Leu Asn Tyr Thr Asp Met Ala
 1570 1575 1580
 His Ala Leu Thr Arg Leu Ile Arg Lys Lys Leu Met Cys Asp Asn Ala
 1585 1590 1595 1600
 Leu Leu Thr Pro Ile Pro Ser Pro Met Val Asn Leu Thr Gln Val Ile
 1605 1610 1615
 Asp Pro Thr Glu Gln Leu Ala Tyr Phe Pro Lys Ile Thr Phe Glu Arg
 1620 1625 1630
 Leu Lys Asn Tyr Asp Thr Ser Ser Asn Tyr Ala Lys Gly Lys Leu Thr
 1635 1640 1645
 Arg Asn Tyr Met Ile Leu Leu Pro Trp Gln His Val Asn Arg Tyr Asn
 1650 1655 1660
 Phe Val Phe Ser Ser Thr Gly Cys Lys Val Ser Leu Lys Thr Cys Ile
 1665 1670 1675 1680
 Gly Lys Leu Met Lys Asp Leu Asn Pro Lys Val Leu Tyr Phe Ile Gly
 1685 1690 1695
 Glu Gly Ala Gly Asn Trp Met Ala Arg Thr Ala Cys Glu Tyr Pro Asp
 1700 1705 1710
 Ile Lys Phe Val Tyr Arg Ser Leu Lys Asp Asp Leu Asp His His Tyr
 1715 1720 1725
 Pro Leu Glu Tyr Gln Arg Val Ile Gly Glu Leu Ser Arg Ile Ile Asp
 1730 1735 1740
 Ser Gly Glu Gly Leu Ser Met Glu Thr Thr Asp Ala Thr Gln Lys Thr
 1745 1750 1755 1760
 His Trp Asp Leu Ile His Arg Val Ser Lys Asp Ala Leu Leu Ile Thr
 1765 1770 1775
 Leu Cys Asp Ala Glu Phe Lys Asp Arg Asp Asp Phe Phe Lys Met Val
 1780 1785 1790
 Ile Leu Trp Arg Lys His Val Leu Ser Cys Arg Ile Cys Thr Thr Tyr
 1795 1800 1805
 Gly Thr Asp Leu Tyr Leu Phe Ala Lys Tyr His Ala Lys Asp Cys Asn
 1810 1815 1820
 Val Lys Leu Pro Phe Phe Val Arg Ser Val Ala Thr Phe Ile Met Gln
 1825 1830 1835 1840
 Gly Ser Lys Leu Ser Gly Ser Glu Cys Tyr Ile Leu Leu Thr Leu Gly
 1845 1850 1855
 His His Asn Asn Leu Pro Cys His Gly Glu Ile Gln Asn Ser Lys Met
 1860 1865 1870
 Lys Ile Ala Val Cys Asn Asp Phe Tyr Ala Ala Lys Lys Leu Asp Asn
 1875 1880 1885
 Lys Ser Ile Glu Ala Asn Cys Lys Ser Leu Leu Ser Gly Leu Arg Ile
 1890 1895 1900
 Pro Ile Asn Lys Lys Glu Leu Asn Arg Gln Arg Arg Leu Leu Thr Leu
 1905 1910 1915 1920
 Gln Ser Asn His Ser Ser Val Ala Thr Val Gly Gly Ser Lys Val Ile
 1925 1930 1935
 Glu Ser Lys Trp Leu Thr Asn Lys Ala Asn Thr Ile Ile Asp Trp Leu
 1940 1945 1950
 Glu His Ile Leu Asn Ser Pro Lys Gly Glu Leu Asn Tyr Asp Phe Phe
 1955 1960 1965
 Glu Ala Leu Glu Asn Thr Tyr Pro Asn Met Ile Lys Leu Ile Asp Asn
 1970 1975 1980
 Leu Gly Asn Ala Glu Ile Lys Lys Leu Ile Lys Val Thr Gly Tyr Met
 1985 1990 1995 2000
 Leu Val Ser Lys Lys
 2005

<210> 406
 <211> 13350

<212> DNA
<213> Human metapneumovirus

<220>
<223> RNA-dependent RNA polymerase (L) of Human metapneumovirus

<400> 406

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gatgtggta caacaactgc agtgacaccc tcatcattgc aacaagaaat aacactgtt 180
tgtggagaaa ttctgtatgc taaacatgt gactacaat atgctgcaga aataggaata 240
caatatatta gcacagctt aggtcagag agagtgcgc agattctgag gaactcaggc 300
agtgaagtcc aagtggctt aaccagaacg tactctctgg ggaaaattaa aaacaataaa 360
ggagaagatt tacagatgtt agacatacac ggggttagaga agagctgggt agaagagata 420
gacaaagaag caaggaaaac aatggcaacc ttgcttaagg aatcatcagg taatatccca 480
caaattcaga ggcctcagc accagacaca cccataatct tattatgtt aggtgcctta 540
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aaccgtgtac taagtgtatgc actcaagaga tacccttagaa tggacatacc aaagattgcc 660
agatccttct atgacttatt tgaacaaaaa gtgttatcaca gaagttgtt cattgagtt 720
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gacagtcaaa atgattatga gtaattaaaaa aagtgggaca agtcaaaatg tcattccctg 1260
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tgatatttgg gctttaaga acactcaaca ttgctacagc aggaccacca gcagcaagag 1860
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gaaatggtag tgtaaaatata acagaaaaaag caaaagagct caacaaaattt gttgaagatg 2040
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agttgtatca atagaaaagg acctgttacc tgcacccctt acaatatggt tccctttttt 2280
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<211> 568

<212> PRT

<213> Human parainfluenza 1 virus (strain CI-5/73)

<220>

<223> RNA polymerase alpha subunit (Nucleocapsid phosphoprotein) of Human parainfluenza 1 virus

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<210> 408

<211> 2223

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<213> Human parainfluenza virus 1 strain Washington/1964

<220>

<223> L polymerase protein of Human parainfluenza 1 virus

<400> 408

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 325 330 335
 Ser Ile Met Glu Ser Leu Ile Lys Ile Phe Arg Glu Thr Ser Ile Asp

340	345	350													
Glu	Lys	Ala	Glu	Ile	Phe	Ser	Phe	Phe	Arg	Thr	Phe	Gly	His	Pro	Ser
355							360						365		
Leu	Glu	Ala	Ile	Thr	Ala	Ala	Asp	Lys	Val	Arg	Thr	His	Met	Tyr	Ser
370							375						380		
Ser	Lys	Ile	Ile	Leu	Lys	Thr	Leu	Tyr	Glu	Cys	His	Ala	Ile	Phe	
385							390						395		400
Cys	Ala	Ile	Ile	Ile	Asn	Gly	Tyr	Arg	Glu	Arg	His	Gly	Gly	Gln	Trp
							405						410		415
Pro	Pro	Cys	Glu	Phe	Pro	Asn	His	Val	Cys	Leu	Glu	Leu	Lys	Asn	Ala
							420						425		430
Gln	Gly	Ser	Asn	Ser	Ala	Ile	Ser	Tyr	Glu	Cys	Ala	Val	Asp	Asn	Tyr
							435						440		445
Ser	Ser	Phe	Ile	Gly	Phe	Lys	Phe	Leu	Lys	Phe	Ile	Glu	Pro	Gln	Leu
							450						455		460
Asp	Glu	Asp	Leu	Thr	Ile	Tyr	Met	Lys	Asp	Lys	Ala	Leu	Ser	Pro	Arg
465							470						475		480
Lys	Ala	Ala	Trp	Asp	Ser	Val	Tyr	Pro	Asp	Ser	Asn	Leu	Tyr	Tyr	Lys
							485						490		495
Val	Pro	Glu	Ser	Glu	Glu	Thr	Arg	Arg	Leu	Ile	Glu	Val	Phe	Ile	Asn
							500						505		510
Asp	Asn	Asn	Phe	Asn	Pro	Ala	Asp	Ile	Ile	Asn	Tyr	Val	Glu	Ser	Gly
							515						520		525
Glu	Trp	Leu	Asn	Asp	Asp	Ser	Phe	Asn	Ile	Ser	Tyr	Ser	Leu	Lys	Glu
							530						535		540
Lys	Glu	Ile	Lys	Gln	Glu	Gly	Arg	Leu	Phe	Ala	Lys	Met	Thr	Tyr	Lys
545							550						555		560
Met	Arg	Ala	Val	Gln	Val	Leu	Ala	Glu	Thr	Leu	Leu	Ala	Lys	Gly	Val
							565						570		575
Gly	Glu	Leu	Phe	Ser	Glu	Asn	Gly	Met	Val	Lys	Gly	Glu	Ile	Asp	Leu
							580						585		590
Leu	Lys	Arg	Leu	Thr	Thr	Leu	Ser	Val	Ser	Gly	Val	Pro	Arg	Ser	Asn
							595						600		605
Ser	Val	Tyr	Asn	Asn	Pro	Ile	Leu	His	Glu	Lys	Leu	Ile	Lys	Asn	Met
							610						615		620
Asn	Lys	Cys	Asn	Ser	Asn	Gly	Tyr	Trp	Asp	Glu	Arg	Lys	Lys	Ser	Lys
625							630						635		640
Asn	Glu	Phe	Lys	Ala	Ala	Asp	Ser	Ser	Thr	Glu	Gly	Tyr	Glu	Thr	Leu
							645						650		655
Ser	Cys	Phe	Leu	Thr	Thr	Asp	Leu	Lys	Tyr	Cys	Leu	Asn	Trp	Arg	
							660						665		670
Phe	Glu	Ser	Thr	Ala	Leu	Phe	Gly	Gln	Arg	Cys	Asn	Glu	Ile	Phe	Gly
							675						680		685
Phe	Lys	Thr	Phe	Phe	Asn	Trp	Met	His	Pro	Ile	Leu	Glu	Lys	Ser	Thr
							690						695		700
Ile	Tyr	Val	Gly	Asp	Pro	Tyr	Cys	Pro	Val	Pro	Asp	Arg	Met	His	Lys
705							710						715		720
Glu	Leu	Gln	Asp	His	Asp	Asp	Thr	Gly	Ile	Phe	Ile	His	Asn	Pro	Arg
							725						730		735
Gly	Gly	Ile	Glu	Gly	Tyr	Cys	Gln	Lys	Leu	Trp	Thr	Leu	Ile	Ser	Ile
							740						745		750
Ser	Ala	Ile	His	Leu	Ala	Ala	Val	Lys	Val	Gly	Val	Arg	Val	Ser	Ala
							755						760		765
Met	Val	Gln	Gly	Asp	Asn	Gln	Ala	Ile	Ala	Val	Thr	Ser	Arg	Val	Pro
							770						775		780
Val	Thr	Gln	Thr	Tyr	Lys	Gln	Lys	Lys	Thr	His	Val	Tyr	Glu	Ile	
785							790						795		800
Thr	Arg	Tyr	Phe	Gly	Ala	Leu	Arg	Glu	Val	Met	Phe	Asp	Ile	Gly	His
							805						810		815
Glu	Leu	Lys	Leu	Asn	Glu	Thr	Ile	Ile	Ser	Ser	Lys	Met	Phe	Val	Tyr
							820						825		830

Ser Lys Arg Ile Tyr Tyr Asp Gly Lys Ile Leu Pro Gln Cys Leu Lys
 835 840 845
 Ala Leu Thr Arg Cys Val Phe Trp Ser Glu Thr Leu Val Asp Glu Asn
 850 855 860
 Arg Ser Ala Cys Ser Asn Ile Ala Thr Ser Ile Ala Lys Ala Ile Glu
 865 870 875 880
 Asn Gly Tyr Ser Pro Ile Leu Gly Tyr Cys Ile Ala Leu Phe Lys Thr
 885 890 895
 Cys Gln Gln Val Cys Ile Ser Leu Gly Met Thr Ile Asn Pro Thr Ile
 900 905 910
 Thr Ser Thr Ile Lys Asp Gln Tyr Phe Lys Gly Lys Asn Trp Leu Arg
 915 920 925
 Cys Ala Ile Leu Ile Pro Ala Asn Ile Gly Gly Phe Asn Tyr Met Ser
 930 935 940
 Thr Ala Arg Cys Phe Val Arg Asn Ile Gly Asp Pro Ala Val Ala Ala
 945 950 955 960
 Leu Ala Asp Leu Lys Arg Phe Ile Lys Ala Gly Leu Leu Asp Lys Gln
 965 970 975
 Val Leu Tyr Arg Val Met Asn Gln Glu Pro Gly Asp Ser Ser Phe Leu
 980 985 990
 Asp Trp Ala Ser Asp Pro Tyr Ser Cys Asn Leu Pro His Ser Gln Ser
 995 1000 1005
 Ile Thr Thr Ile Ile Lys Asn Val Thr Ala Arg Ser Val Leu Gln Glu
 1010 1015 1020
 Ser Pro Asn Pro Leu Leu Ser Gly Leu Phe Ser Glu Ser Ser Ser Glu
 1025 1030 1035 1040
 Glu Asp Leu Asn Leu Ala Ser Phe Leu Met Asp Arg Lys Ala Ile Leu
 1045 1050 1055
 Pro Arg Val Ala His Glu Ile Leu Asp Asn Ser Leu Thr Gly Val Arg
 1060 1065 1070
 Glu Ala Ile Ala Gly Met Leu Asp Thr Thr Lys Ser Leu Val Arg Ala
 1075 1080 1085
 Ser Val Arg Arg Gly Gly Leu Ser Tyr Ser Ile Leu Arg Arg Leu Ile
 1090 1095 1100
 Asn Tyr Asp Leu Leu Gln Tyr Glu Thr Leu Thr Arg Thr Leu Arg Lys
 1105 1110 1115 1120
 Pro Val Lys Asp Asn Ile Glu Tyr Glu Tyr Met Cys Ser Val Glu Leu
 1125 1130 1135
 Ala Ile Gly Leu Arg Gln Lys Met Trp Phe His Leu Thr Tyr Gly Arg
 1140 1145 1150
 Pro Ile His Gly Leu Glu Thr Pro Asp Pro Leu Glu Leu Leu Arg Gly
 1155 1160 1165
 Ser Phe Ile Glu Gly Ser Glu Ile Cys Lys Phe Cys Arg Ser Glu Gly
 1170 1175 1180
 Asn Asn Pro Met Tyr Thr Trp Phe Tyr Leu Pro Asp Asn Ile Asp Leu
 1185 1190 1195 1200
 Asp Thr Leu Ser Asn Gly Ser Pro Ala Ile Arg Ile Pro Tyr Phe Gly
 1205 1210 1215
 Ser Ala Thr Asp Glu Arg Ser Glu Ala Gln Leu Gly Tyr Val Lys Asn
 1220 1225 1230
 Leu Ser Lys Pro Ala Lys Ala Ala Ile Arg Ile Ala Met Val Tyr Thr
 1235 1240 1245
 Trp Ala Tyr Gly Thr Asp Glu Ile Ser Trp Met Glu Ala Ala Leu Ile
 1250 1255 1260
 Ala Gln Thr Arg Ala Asn Leu Ser Leu Glu Asn Leu Lys Leu Leu Thr
 1265 1270 1275 1280
 Pro Val Ser Thr Ser Thr Asn Leu Ser His Arg Leu Arg Asp Thr Ala
 1285 1290 1295
 Thr Gln Met Lys Phe Ser Ser Ala Thr Leu Val Arg Ala Ser Arg Phe
 1300 1305 1310
 Ile Thr Ile Ser Asn Asp Asn Met Ala Leu Lys Glu Ala Gly Glu Ser

1315	1320	1325
Lys Asp Thr Asn Leu Val Tyr Gln Gln Ile Met Leu Thr Gly Leu Ser		
1330	1335	1340
Leu Phe Glu Phe Asn Met Arg Tyr Lys Gln Gly Ser Leu Ser Lys Pro		
1345	1350	1355
Met Ile Leu His Leu His Asn Asn Lys Cys Cys Ile Ile Glu Ser		
1365	1370	1375
Pro Gln Glu Leu Asn Ile Pro Pro Arg Ser Thr Leu Asp Leu Glu Ile		
1380	1385	1390
Thr Gln Glu Asn Asn Lys Leu Ile Tyr Asp Pro Asp Pro Leu Lys Asp		
1395	1400	1405
Ile Asp Leu Glu Leu Phe Ser Lys Val Arg Asp Val Val His Thr Ile		
1410	1415	1420
Asp Met Asn Tyr Trp Ser Asp Asp Glu Ile Ile Arg Ala Thr Ser Ile		
1425	1430	1435
Cys Thr Ala Met Thr Ile Ala Asp Thr Met Ser Gln Leu Asp Arg Asp		
1445	1450	1455
Asn Leu Lys Glu Met Ile Ala Leu Ile Asn Asp Asp Ile Asn Ser		
1460	1465	1470
Leu Ile Thr Glu Phe Met Val Ile Asp Ile Pro Leu Phe Cys Ser Thr		
1475	1480	1485
Phe Gly Gly Ile Leu Ile Asn Gln Phe Ala Tyr Ser Leu Tyr Gly Leu		
1490	1495	1500
Asn Val Arg Gly Arg Asp Glu Ile Trp Gly Tyr Val Ile Arg Ile Ile		
1505	1510	1515
Lys Asp Thr Ser His Ala Val Leu Lys Val Leu Ser Asn Ala Leu Ser		
1525	1530	1535
His Pro Lys Ile Phe Lys Arg Phe Trp Asp Ala Gly Val Val Glu Pro		
1540	1545	1550
Val Tyr Gly Pro Asn Leu Ser Asn Gln Asp Lys Ile Leu Leu Ala Ile		
1555	1560	1565
Ser Val Cys Glu Tyr Ser Val Asp Leu Phe Met Arg Asp Trp Gln Glu		
1570	1575	1580
Gly Ile Pro Leu Glu Ile Phe Ile Cys Asp Asn Asp Pro Asn Ile Ala		
1585	1590	1595
Glu Met Arg Lys Leu Ser Phe Leu Ala Arg His Leu Ala Tyr Leu Cys		
1605	1610	1615
Ser Leu Ala Glu Ile Ala Lys Glu Gly Pro Lys Leu Glu Ser Met Thr		
1620	1625	1630
Ser Leu Glu Arg Leu Glu Ser Leu Lys Glu Tyr Leu Glu Leu Thr Phe		
1635	1640	1645
Leu Asp Asp Pro Ile Leu Arg Tyr Ser Gln Leu Thr Gly Leu Val Ile		
1650	1655	1660
Lys Ile Phe Pro Ser Thr Leu Thr Tyr Ile Arg Lys Ser Ser Ile Lys		
1665	1670	1675
Val Leu Arg Val Arg Gly Ile Gly Ile Pro Glu Val Leu Glu Asp Trp		
1685	1690	1695
Asp Pro Asp Ala Asp Ser Met Leu Leu Asp Asn Ile Thr Ala Glu Val		
1700	1705	1710
Gln His Asn Ile Pro Leu Lys Lys Asn Glu Arg Thr Pro Phe Trp Gly		
1715	1720	1725
Leu Arg Val Ser Lys Ser Gln Val Leu Arg Leu Arg Gly Tyr Glu Glu		
1730	1735	1740
Ile Lys Arg Glu Glu Arg Gly Arg Ser Gly Val Gly Leu Thr Leu Pro		
1745	1750	1755
Phe Asp Gly Arg Tyr Leu Ser His Gln Leu Arg Leu Phe Gly Ile Asn		
1765	1770	1775
Ser Thr Ser Cys Leu Lys Ala Leu Glu Leu Thr Tyr Leu Leu Asn Pro		
1780	1785	1790
Leu Val Asn Lys Asp Lys Asp Arg Leu Tyr Leu Gly Glu Gly Ala Gly		
1795	1800	1805

Ala Met Leu Ser Cys Tyr Asp Ala Thr Leu Gly Pro Cys Met Asn Tyr
 1810 1815 1820
 Tyr Asn Ser Gly Val Asn Ser Cys Asp Leu Asn Gly Gln Arg Glu Leu
 1825 1830 1835 1840
 Asn Ile Tyr Pro Ser Glu Val Ala Leu Val Gly Lys Lys Leu Asn Asn
 1845 1850 1855
 Val Thr Ser Leu Cys Gln Arg Val Lys Val Leu Phe Asn Gly Asn Pro
 1860 1865 1870
 Gly Ser Thr Trp Ile Gly Asn Asp Glu Cys Glu Thr Leu Ile Trp Asn
 1875 1880 1885
 Glu Leu Gln Asn Asn Ser Ile Gly Phe Ile His Cys Asp Met Glu Gly
 1890 1895 1900
 Gly Glu His Lys Cys Asp Gln Val Val Leu His Glu His Tyr Ser Val
 1905 1910 1915 1920
 Ile Arg Ile Ala Tyr Leu Val Gly Asp Lys Asp Val Ile Leu Val Ser
 1925 1930 1935
 Lys Ile Ala Pro Arg Leu Gly Thr Asp Trp Thr Lys Gln Leu Ser Leu
 1940 1945 1950
 Tyr Leu Arg Tyr Trp Arg Asp Val Ser Leu Ile Val Leu Lys Thr Ser
 1955 1960 1965
 Asn Pro Ala Ser Thr Glu Met Tyr Leu Ile Ser Lys Asp Pro Lys Ser
 1970 1975 1980
 Asp Ile Ile Glu Asp Ser Asn Thr Val Leu Ala Asn Leu Leu Pro Leu
 1985 1990 1995 2000
 Ser Lys Glu Asp Ser Ile Lys Ile Glu Lys Trp Ile Leu Val Glu Lys
 2005 2010 2015
 Ala Lys Val His Asp Trp Ile Val Arg Glu Leu Lys Glu Gly Ser Ala
 2020 2025 2030
 Ser Ser Gly Met Leu Arg Pro Tyr His Gln Ala Leu Gln Ile Phe Gly
 2035 2040 2045
 Phe Glu Pro Asn Leu Asn Lys Leu Cys Arg Asp Phe Leu Ser Thr Leu
 2050 2055 2060
 Asn Ile Val Asp Thr Lys Asn Cys Ile Ile Thr Phe Asp Arg Val Leu
 2065 2070 2075 2080
 Arg Asp Thr Ile Phe Glu Trp Thr Arg Ile Lys Asp Ala Asp Lys Lys
 2085 2090 2095
 Leu Arg Leu Thr Gly Lys Tyr Asp Leu Tyr Pro Leu Arg Asp Ser Gly
 2100 2105 2110
 Lys Leu Lys Val Ile Ser Arg Arg Leu Val Ile Ser Trp Ile Ala Leu
 2115 2120 2125
 Ser Met Ser Thr Arg Leu Val Thr Gly Ser Phe Pro Asp Ile Lys Phe
 2130 2135 2140
 Glu Ser Arg Leu Gln Leu Gly Ile Val Ser Ile Ser Ser Arg Glu Ile
 2145 2150 2155 2160
 Lys Asn Leu Arg Val Ile Ser Lys Ile Val Ile Asp Lys Phe Glu Asp
 2165 2170 2175
 Ile Ile His Ser Val Thr Tyr Arg Phe Leu Thr Lys Glu Ile Lys Ile
 2180 2185 2190
 Leu Met Lys Ile Leu Gly Ala Val Lys Leu Phe Gly Ala Arg Gln Ser
 2195 2200 2205
 Thr Ser Ala Asp Ile Thr Asn Ile Asp Thr Ser Asp Ser Ile Gln
 2210 2215 2220

<210> 409
 <211> 575
 <212> PRT
 <213> Human parainfluenza virus 1 strain Washington/1964

<220>
 <223> HN glycoprotein of Human parainfluenza 1 virus

<400> 409

Met Ala Glu Lys Gly Lys Thr Asn Ser Ser Tyr Trp Ser Thr Thr Arg
1 5 10 15
Asn Asp Asn Ser Thr Val Asn Thr His Ile Asn Thr Pro Ala Gly Arg
20 25 30
Thr His Ile Trp Leu Leu Ile Ala Thr Thr Met His Thr Val Leu Ser
35 40 45
Phe Ile Ile Met Ile Leu Cys Ile Asp Leu Ile Ile Lys Gln Asp Thr
50 55 60
Cys Met Lys Thr Asn Ile Met Thr Val Ser Ser Met Asn Glu Ser Ala
65 70 75 80
Lys Ile Ile Lys Glu Thr Ile Thr Glu Leu Ile Arg Gln Glu Val Ile
85 90 95
Ser Arg Thr Ile Asn Ile Gln Ser Ser Val Gln Ser Gly Ile Pro Ile
100 105 110
Leu Leu Asn Lys Gln Ser Arg Asp Leu Thr Gln Leu Ile Glu Lys Ser
115 120 125
Cys Asn Arg Gln Glu Leu Ala Gln Ile Cys Glu Asn Thr Ile Ala Ile
130 135 140
His His Ala Asp Gly Ile Ser Pro Leu Asp Pro His Asp Phe Trp Arg
145 150 155 160
Cys Pro Val Gly Glu Pro Leu Leu Ser Asn Asn Pro Asn Ile Ser Leu
165 170 175
Leu Pro Gly Pro Ser Leu Leu Ser Gly Ser Thr Thr Ile Ser Gly Cys
180 185 190
Val Arg Leu Pro Ser Leu Ser Ile Gly Asp Ala Ile Tyr Ala Tyr Ser
195 200 205
Ser Asn Leu Ile Thr Gln Gly Cys Ala Asp Ile Gly Lys Ser Tyr Gln
210 215 220
Val Leu Gln Leu Gly Tyr Ile Ser Leu Asn Ser Asp Met Tyr Pro Asp
225 230 235 240
Leu Asn Pro Val Ile Ser His Thr Tyr Asp Ile Asn Asp Asn Arg Lys
245 250 255
Ser Cys Ser Val Ile Ala Ala Gly Thr Arg Gly Tyr Gln Leu Cys Ser
260 265 270
Leu Pro Thr Val Asn Glu Thr Thr Asp Tyr Ser Ser Glu Gly Ile Glu
275 280 285
Asp Leu Val Phe Asp Ile Leu Asp Leu Lys Gly Lys Thr Lys Ser His
290 295 300
Arg Tyr Lys Asn Glu Asp Ile Thr Phe Asp His Pro Phe Ser Ala Met
305 310 315 320
Tyr Pro Ser Val Gly Ser Gly Ile Lys Ile Glu Asn Thr Leu Ile Phe
325 330 335
Leu Gly Tyr Gly Leu Thr Thr Pro Leu Gln Gly Asp Thr Lys Cys
340 345 350
Val Ile Asn Arg Cys Thr Asn Val Asn Gln Ser Val Cys Asn Asp Ala
355 360 365
Leu Lys Ile Thr Trp Leu Lys Lys Arg Gln Val Val Asn Val Leu Ile
370 375 380
Arg Ile Asn Asn Tyr Leu Ser Asp Arg Pro Lys Ile Val Val Glu Thr
385 390 395 400
Ile Pro Ile Thr Gln Asn Tyr Leu Gly Ala Glu Gly Arg Leu Leu Lys
405 410 415
Leu Gly Lys Lys Ile Tyr Ile Tyr Thr Arg Ser Ser Gly Trp His Ser
420 425 430
Asn Leu Gln Ile Gly Ser Leu Asp Ile Asn Asn Pro Met Thr Ile Lys
435 440 445
Trp Ala Pro His Glu Val Leu Ser Arg Pro Gly Asn Gln Asp Cys Asn
450 455 460
Trp Tyr Asn Arg Cys Pro Arg Glu Cys Ile Ser Gly Val Tyr Thr Asp

465	470	475	480												
Ala	Tyr	Pro	Leu	Ser	Pro	Asp	Ala	Val	Asn	Val	Ala	Thr	Thr	Thr	Leu
485									490						495
Tyr	Ala	Asn	Thr	Ser	Arg	Val	Asn	Pro	Thr	Ile	Met	Tyr	Ser	Asn	Thr
500									505						510
Ser	Glu	Ile	Ile	Asn	Met	Leu	Arg	Leu	Lys	Asn	Val	Gln	Leu	Glu	Ala
515									520						525
Ala	Tyr	Thr	Thr	Thr	Ser	Cys	Ile	Thr	His	Phe	Gly	Lys	Gly	Tyr	Cys
530									535						540
Phe	His	Ile	Val	Glu	Ile	Asn	Gln	Ala	Ser	Leu	Asn	Thr	Leu	Gln	Pro
545									550						560
Met	Leu	Phe	Lys	Thr	Ser	Ile	Pro	Lys	Ile	Cys	Lys	Ile	Thr	Ser	
									565						575

<210> 410
 <211> 348
 <212> PRT
 <213> Human parainfluenza virus 1 strain Washington/1964

<220>
 <223> matrix protein of Human parainfluenza 1 virus

<400> 410															
Met	Ala	Glu	Thr	Tyr	Arg	Phe	Pro	Arg	Phe	Ser	His	Glu	Glu	Asn	Gly
1											10				15
Thr	Val	Glu	Pro	Leu	Pro	Leu	Lys	Thr	Gly	Pro	Asp	Lys	Lys	Ala	Ile
20									25						30
Pro	His	Ile	Arg	Ile	Val	Lys	Val	Gly	Asp	Pro	Pro	Lys	His	Gly	Val
35									40						45
Arg	Tyr	Leu	Asp	Val	Leu	Leu	Gly	Phe	Phe	Glu	Thr	Pro	Lys	Gln	
50									55						60
Gly	Pro	Leu	Ser	Gly	Ser	Ile	Ser	Asp	Leu	Thr	Glu	Ser	Thr	Ser	Tyr
65									70						80
Ser	Ile	Cys	Gly	Ser	Gly	Ser	Leu	Pro	Ile	Gly	Ile	Ala	Lys	Tyr	Tyr
85									90						95
Gly	Thr	Asp	Gln	Glu	Leu	Leu	Lys	Ala	Cys	Ile	Asp	Leu	Lys	Ile	Thr
100									105						110
Val	Arg	Arg	Thr	Val	Arg	Ser	Gly	Glu	Met	Ile	Val	Tyr	Met	Val	Asp
115									120						125
Ser	Ile	His	Ala	Pro	Leu	Leu	Pro	Trp	Ser	Ser	Arg	Leu	Arg	Gln	Gly
130									135						140
Met	Ile	Tyr	Asn	Ala	Asn	Lys	Val	Ala	Leu	Ala	Pro	Gln	Cys	Leu	Pro
145									150						160
Val	Asp	Lys	Asp	Ile	Arg	Phe	Arg	Val	Val	Phe	Val	Asn	Gly	Thr	Ser
165									170						175
Leu	Gly	Thr	Ile	Thr	Ile	Ala	Lys	Val	Pro	Lys	Thr	Leu	Ala	Asp	Leu
180									185						190
Ala	Leu	Pro	Asn	Ser	Ile	Ser	Val	Asn	Leu	Leu	Val	Thr	Leu	Arg	Ala
195									200						205
Gly	Val	Ser	Thr	Glu	Gln	Lys	Gly	Ile	Leu	Pro	Val	Leu	Asp	Asp	Asp
210									215						220
Gly	Glu	Lys	Lys	Leu	Asn	Phe	Met	Val	His	Leu	Gly	Ile	Ile	Arg	Arg
225									230						240
Lys	Val	Gly	Lys	Ile	Tyr	Ser	Val	Glu	Tyr	Cys	Lys	Asn	Lys	Ile	Glu
245									250						255
Lys	Met	Lys	Leu	Ile	Phe	Ser	Leu	Gly	Leu	Val	Gly	Gly	Ile	Ser	Phe
260									265						270
His	Val	His	Ala	Thr	Gly	Thr	Leu	Ser	Lys	Thr	Leu	Met	Ser	Gln	Leu
275									280						285
Ala	Trp	Lys	Lys	Ala	Val	Cys	Tyr	Pro	Leu	Met	Asp	Val	Asn	Pro	His

290 295 300
Met Asn Leu Val Ile Trp Ala Ala Ser Val Glu Ile Thr Ser Val Asp
305 310 315 320
Ala Val Phe Gln Pro Ala Ile Pro Lys Glu Phe Arg Tyr Tyr Pro Asn
325 330 335
Val Val Ala Lys Ser Ile Gly Lys Ile Arg Arg Ile
340 345

<210> 411
<211> 181
<212> PRT
<213> Human parainfluenza virus 1 strain Washington/1964

<220>
<223> Y1 protein of Human parainfluenza 1 virus

<400> 411
Met Ser Ser Asp Ser Leu Thr Ser Ser Tyr Pro Thr Ser Pro Gln Lys
1 5 10 15
Leu Glu Lys Thr Glu Ala Gly Ser Met Val Ser Ser Thr Thr Gln Lys
20 25 30
Lys Thr Ser His His Ala Lys Pro Thr Ile Thr Thr Lys Thr Glu Gln
35 40 45
Ser Gln Arg Arg Pro Lys Ile Ile Asp Gln Val Arg Gly Val Glu Ser
50 55 60
Leu Gly Glu Gln Val Ser Gln Lys Gln Arg His Met Leu Glu Ser Leu
65 70 75 80
Ile Asn Lys Val Tyr Thr Gly Pro Leu Gly Glu Glu Leu Val Gln Thr
85 90 95
Leu Tyr Leu Arg Ile Trp Ala Met Lys Glu Thr Pro Glu Ser Thr Lys
100 105 110
Ile Leu Gln Met Arg Glu Asp Ile Arg Asp Gln Tyr Leu Arg Met Lys
115 120 125
Thr Glu Arg Trp Leu Arg Thr Leu Ile Arg Gly Lys Lys Thr Lys Leu
130 135 140
Arg Asp Phe Gln Lys Arg Tyr Glu Glu Val His Pro Tyr Leu Met Met
145 150 155 160
Glu Arg Val Glu Gln Ile Ile Met Glu Glu Ala Trp Lys Leu Ala Ala
165 170 175
His Ile Val Gln Glu
180

<210> 412
<211> 204
<212> PRT
<213> Human parainfluenza virus 1 strain Washington/1964

<220>
<223> C protein of Human parainfluenza 1 virus

<400> 412
Met Pro Ser Phe Leu Arg Gly Ile Leu Lys Pro Lys Glu Arg His His
1 5 10 15
Glu Asn Lys Asn His Ser Gln Met Ser Ser Asp Ser Leu Thr Ser Ser
20 25 30
Tyr Pro Thr Ser Pro Gln Lys Leu Glu Lys Thr Glu Ala Gly Ser Met
35 40 45
Val Ser Ser Thr Thr Gln Lys Lys Thr Ser His His Ala Lys Pro Thr
50 55 60
Ile Thr Thr Lys Thr Glu Gln Ser Gln Arg Arg Pro Lys Ile Ile Asp
65 70 75 80

<210> 413

<211> 568

<212> PRT

<213> Human parainfluenza virus 1 strain Washington/1964

<220>

<223> phosphoprotein of Human parainfluenza 1 virus

<400> 413

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Met Asp Gln Asp Ala Phe Phe Phe Glu Arg Asp Pro Glu Ala Glu Gly
1 5 10 15
Glu Ala Pro Arg Lys Gln Glu Ser Leu Ser Asp Val Ile Gly Leu Leu
20 25 30
Asp Val Val Leu Ser Tyr Lys Pro Thr Glu Ile Gly Glu Asp Arg Ser
35 40 45
Trp Leu His Gly Ile Ile Asp Asn Pro Lys Glu Asn Lys Pro Ser Cys
50 55 60
Lys Ala Asp Asp Asn Asn Lys Asp Arg Ala Ile Ser Thr Ser Thr Gln
65 70 75 80
Asp His Arg Ser Ser Glu Gly Ser Gly Ile Ser Arg Arg Thr Ser Glu
85 90 95
Ser Lys Thr Glu Thr His Ala Arg Ile Leu Asp Gln Gln Gly Ile His
100 105 110
Arg Ala Ser Arg Arg Gly Thr Ser Pro Asn Pro Leu Pro Glu Asn Met
115 120 125
Gly Asn Glu Arg Asn Thr Arg Ile Asp Glu Asp Ser Pro Asn Glu Arg
130 135 140
Arg His Gln Arg Ser Val Leu Thr Asp Glu Asp Arg Lys Met Ala Glu
145 150 155 160
Asn Ser Asn Lys Arg Glu Glu Asp Gln Val Glu Gly Phe Pro Glu Glu
165 170 175
Val Arg Arg Ser Thr Pro Leu Ser Asp Asp Gly Glu Gly Arg Thr Asn
180 185 190
Asn Asn Gly Arg Ser Met Glu Thr Ser Ser Thr His Ser Thr Arg Ile
195 200 205
Thr Asp Val Ile Thr Asn Pro Ser Pro Glu Leu Glu Asp Ala Val Leu
210 215 220
Gln Arg Asn Lys Arg Arg Pro Thr Thr Ile Lys Arg Asn Gln Thr Arg
225 230 235 240
Ser Glu Arg Thr Gln Ser Ser Glu Leu His Lys Ser Thr Ser Glu Asn
245 250 255
Ser Ser Asn Leu Glu Asp His Asn Thr Lys Thr Ser Pro Lys Val Pro
260 265 270
Pro Ser Lys Asn Glu Glu Ser Ala Ala Thr Pro Lys Asn Asn His Asn

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275	280	285	
His Arg Lys Thr Arg Tyr	Thr Thr Asn Asn Ala Asn Asn Asn	Asn Thr Lys	
290	295	300	
Ser Pro Pro Thr Pro Glu His Asp Ala Thr	Ala Asn Glu Glu Glu	Thr	
305	310	315	320
Ser Asn Thr Ser Val Asp Glu Met Ala	Lys Leu Leu Val Ser	Leu Gly	
325	330	335	
Val Met Lys Ser Gln His Glu Phe	Glu Leu Ser Arg Ser	Ala Ser His	
340	345	350	
Val Phe Ala Lys Arg Met Leu Lys Ser	Ala Asn Tyr Lys	Glu Met Thr	
355	360	365	
Phe Asn Leu Cys Gly Met Leu Ile Ser	Val Glu Lys Ser	Leu Glu Asn	
370	375	380	
Lys Val Glu Glu Asn Arg Thr Leu Leu	Lys Gln Ile Gln	Glu Glu Ile	
385	390	395	400
Asn Ser Ser Arg Asp Leu His Lys Arg	Phe Ser Glu Tyr	Gln Lys Glu	
405	410	415	
Gln Asn Ser Leu Met Met Ala Asn	Leu Ser Thr	Leu His Ile Ile Thr	
420	425	430	
Asp Arg Gly Gly Lys Thr Gly Asn	Pro Ser Asp Thr	Thr Arg Ser Pro	
435	440	445	
Ser Val Phe Thr Lys Gly Lys Asp Asn	Lys Val Lys	Lys Thr Arg Phe	
450	455	460	
Asp Pro Ser Met Glu Ala Leu Gly	Gly Gln Glu Phe	Lys Pro Asp Leu	
465	470	475	480
Ile Arg Glu Asp Glu Leu Arg Asp	Asp Ile Lys Asn	Pro Val Leu Glu	
485	490	495	
Glu Asn Asn Glu Pro Gln Ala Ser	Asn Ala Ser Arg	Leu Ile Pro	
500	505	510	
Ser Thr Glu Lys His Thr Leu His	Ser Leu Lys Leu	Val Ile Glu Asn	
515	520	525	
Ser Pro Leu Ser Arg Val Glu	Lys Lys Ala Tyr	Ile Lys Ser Leu Tyr	
530	535	540	
Lys Cys Arg Thr Asn Gln Glu Val	Lys Asn Val Met	Glu Leu Phe Glu	
545	550	555	560
Glu Asp Ile Asp Ser Leu Thr Asn			
565			

<210> 414

<211> 524

<212> PRT

<213> Human parainfluenza virus 1 strain Washington/1964

<220>

<223> nucleoprotein of Human parainfluenza 1 virus

<400> 414

Met Ala Gly Leu Leu Ser Thr Phe Asp	Thr Phe Ser Ser Arg Arg Ser		
1	5	10	15
Glu Ser Ile Asn Lys Ser Gly	Gly Gly Ala Ile Ile Pro	Gly Gln Arg	
20	25	30	
Ser Thr Val Ser Val Phe Thr	Leu Gly Pro Ser Val	Thr Asp Asp Ala	
35	40	45	
Asp Lys Leu Leu Ile Ala Thr	Thr Phe Leu Ala His	Ser Leu Asp Thr	
50	55	60	
Asp Lys Gln His Ser Gln Arg	Gly Phe Leu Val	Ser Leu Leu Ala	
65	70	75	80
Met Ala Tyr Ser Ser Pro Glu	Leu Tyr Leu Thr	Thr Asn Gly Val Asn	
85	90	95	
Ala Asp Val Lys Tyr Val Ile	Tyr Asn Ile Glu Arg	Asp Pro Lys Arg	
100	105	110	

Thr Lys Thr Asp Gly Phe Ile Val Lys Thr Arg Asp Met Glu Tyr Glu
 115 120 125
 Arg Thr Thr Glu Trp Leu Phe Gly Pro Met Ile Asn Lys Asn Pro Leu
 130 135 140
 Phe Gln Gly Gln Arg Glu Asn Ala Asp Leu Glu Ala Leu Leu Gln Thr
 145 150 155 160
 Tyr Gly Tyr Pro Ala Cys Leu Gly Ala Ile Ile Val Gln Val Trp Ile
 165 170 175
 Val Leu Val Lys Ala Ile Thr Ser Ser Ala Gly Leu Arg Lys Gly Phe
 180 185 190
 Phe Asn Arg Leu Glu Ala Phe Arg Gln Asp Gly Thr Val Lys Ser Ala
 195 200 205
 Leu Val Phe Thr Gly Asp Thr Val Glu Gly Ile Gly Ala Val Met Arg
 210 215 220
 Ser Gln Gln Ser Leu Val Ser Leu Met Val Glu Thr Leu Val Thr Met
 225 230 235 240
 Asn Thr Ser Arg Ser Asp Leu Thr Thr Leu Glu Lys Asn Ile Gln Ile
 245 250 255
 Val Gly Asn Tyr Ile Arg Asp Ala Gly Leu Ala Ser Phe Met Asn Thr
 260 265 270
 Ile Lys Tyr Gly Val Glu Thr Lys Met Ala Ala Leu Thr Leu Ser Asn
 275 280 285
 Leu Arg Pro Asp Ile Asn Lys Leu Arg Ser Leu Val Asp Ile Tyr Leu
 290 295 300
 Ser Lys Gly Ala Arg Ala Pro Phe Ile Cys Ile Leu Arg Asp Pro Val
 305 310 315 320
 His Gly Asp Phe Ala Pro Gly Asn Tyr Pro Ala Leu Trp Ser Tyr Ala
 325 330 335
 Met Gly Val Ala Val Val Gln Asn Lys Ala Met Gln Gln Tyr Val Thr
 340 345 350
 Gly Arg Thr Tyr Leu Asp Met Glu Met Phe Leu Leu Gly Gln Ala Val
 355 360 365
 Ala Lys Asp Ala Asp Ser Lys Ile Ser Ser Ala Leu Glu Glu Leu
 370 375 380
 Gly Val Thr Asp Thr Ala Lys Glu Arg Leu Arg His His Leu Thr Asn
 385 390 395 400
 Leu Ser Gly Gly Asp Gly Ala Tyr His Lys Pro Thr Gly Gly Ala
 405 410 415
 Ile Glu Val Ala Ile Asp His Thr Asp Ile Thr Phe Gly Val Glu Asp
 420 425 430
 Thr Ala Asp Arg Asp Asn Lys Asn Trp Thr Asn Asp Ser Asn Glu Arg
 435 440 445
 Trp Met Asn His Ser Ile Ser Asn His Thr Ile Thr Ile Arg Gly Ala
 450 455 460
 Glu Glu Leu Glu Glu Glu Thr Asn Asp Glu Asp Ile Thr Asp Ile Glu
 465 470 475 480
 Asn Lys Ile Ala Arg Arg Leu Ala Asp Arg Lys Gln Arg Leu Ser Gln
 485 490 495
 Ala Asn Asn Lys Arg Asp Thr Ser Ser Asp Ala Asp Tyr Glu Asn Asp
 500 505 510
 Asp Asp Ala Thr Ala Ala Gly Ile Gly Gly Ile
 515 520

<210> 415

<211> 555

<212> PRT

<213> Human parainfluenza virus 1 strain Washington/1964

<220>

<223> F glycoprotein of Human parainfluenza 1 virus

<400> 415

Met Gln Lys Ser Glu Ile Leu Phe Leu Val Tyr Ser Ser Leu Leu Leu
1 5 10 15
Ser Ser Ser Leu Cys Gln Ile Pro Val Glu Lys Leu Ser Asn Val Gly
20 25 30
Val Ile Ile Asn Glu Gly Lys Leu Leu Lys Ile Ala Gly Ser Tyr Glu
35 40 45
Ser Arg Tyr Ile Val Leu Ser Leu Val Pro Ser Ile Asp Leu Gln Asp
50 55 60
Gly Cys Gly Thr Thr Gln Ile Ile Gln Tyr Lys Asn Leu Leu Asn Arg
65 70 75 80
Leu Leu Ile Pro Leu Lys Asp Ala Leu Asp Leu Gln Glu Ser Leu Ile
85 90 95
Thr Ile Thr Asn Asp Thr Thr Val Thr Asn Asp Asn Pro Gln Thr Arg
100 105 110
Phe Phe Gly Ala Val Ile Gly Thr Ile Ala Leu Gly Val Ala Thr Ala
115 120 125
Ala Gln Ile Thr Ala Gly Ile Ala Leu Ala Glu Ala Arg Glu Ala Arg
130 135 140
Lys Asp Ile Ala Leu Ile Lys Asp Ser Ile Val Lys Thr His Asn Ser
145 150 155 160
Val Glu Leu Ile Gln Arg Gly Ile Gly Glu Gln Ile Ile Ala Leu Lys
165 170 175
Thr Leu Gln Asp Phe Val Asn Asp Glu Ile Arg Pro Ala Ile Gly Glu
180 185 190
Leu Arg Cys Glu Thr Thr Ala Leu Lys Leu Gly Ile Lys Leu Thr Gln
195 200 205
His Tyr Ser Glu Leu Ala Thr Ala Phe Ser Ser Asn Leu Gly Thr Ile
210 215 220
Gly Glu Lys Ser Leu Thr Leu Gln Ala Leu Ser Ser Leu Tyr Ser Ala
225 230 235 240
Asn Ile Thr Glu Ile Leu Ser Thr Thr Lys Lys Asp Lys Ser Asp Ile
245 250 255
Tyr Asp Ile Ile Tyr Thr Glu Gln Val Lys Gly Thr Val Ile Asp Val
260 265 270
Asp Leu Glu Lys Tyr Met Val Thr Leu Leu Val Lys Ile Pro Ile Leu
275 280 285
Ser Glu Ile Pro Gly Val Leu Ile Tyr Arg Ala Ser Ser Ile Ser Tyr
290 295 300
Asn Ile Glu Gly Glu Glu Trp His Val Ala Ile Pro Asn Tyr Ile Ile
305 310 315 320
Asn Lys Ala Ser Ser Leu Gly Gly Ala Asp Val Thr Asn Cys Ile Glu
325 330 335
Ser Lys Leu Ala Tyr Ile Cys Pro Arg Asp Pro Thr Gln Leu Ile Pro
340 345 350
Asp Asn Gln Gln Lys Cys Ile Leu Gly Asp Val Ser Lys Cys Pro Val
355 360 365
Thr Lys Val Ile Asn Asn Leu Val Pro Lys Phe Ala Phe Ile Asn Gly
370 375 380
Gly Val Val Ala Asn Cys Ile Ala Ser Thr Cys Thr Cys Gly Thr Asn
385 390 395 400
Arg Ile Pro Val Asn Gln Asp Arg Ser Arg Gly Val Thr Phe Leu Thr
405 410 415
Tyr Thr Asn Cys Gly Leu Ile Gly Ile Asn Gly Ile Glu Leu Tyr Ala
420 425 430
Asn Lys Arg Gly Arg Asp Thr Thr Trp Gly Asn Gln Ile Ile Lys Val
435 440 445
Gly Pro Ala Val Ser Ile Arg Pro Val Asp Ile Ser Leu Asn Leu Ala
450 455 460
Ser Ala Thr Asn Phe Leu Glu Ser Lys Thr Glu Leu Met Lys Ala
465 470 475 480

Arg Ala Ile Ile Ser Ala Val Gly Gly Trp His Asn Thr Glu Ser Thr
 485 490 495
 Gln Ile Ile Met Ile Ile Ile Val Cys Ile Leu Ile Ile Ile Cys
 500 505 510
 Gly Ile Leu Tyr Tyr Leu Tyr Arg Val Arg Arg Leu Leu Val Met Ile
 515 520 525
 Asn Ser Thr His Asn Ser Pro Val Asn Ala Tyr Thr Leu Glu Ser Arg
 530 535 540
 Met Arg Asn Pro Tyr Met Gly Asn Asn Ser Asn
 545 550 555

<210> 416

<211> 373

<212> PRT

<213> Human parainfluenza virus 3

<220>

<223> D protein of Human parainfluenza virus 3

<400> 416
 Met Glu Ser Asp Ala Lys Asn Tyr Gln Ile Met Asp Ser Trp Glu Glu
 1 5 10 15
 Glu Ser Arg Asp Lys Ser Thr Asn Ile Ser Ser Ala Leu Asn Ile Ile
 20 25 30
 Glu Phe Ile Leu Ser Thr Asp Pro Gln Glu Asp Leu Ser Glu Asn Asp
 35 40 45
 Thr Ile Asn Thr Arg Thr Gln Gln Leu Ser Ala Thr Ile Tyr Gln Pro
 50 55 60
 Lys Ile Lys Pro Thr Glu Thr Ser Glu Lys Asp Ser Gly Ser Thr Asp
 65 70 75 80
 Lys Asn Arg Gln Ser Gly Ser Ser His Glu Cys Thr Thr Glu Ala Lys
 85 90 95
 Asp Arg Thr Ile Asp Gln Glu Thr Val Gln Arg Gly Pro Gly Arg Arg
 100 105 110
 Ser Ser Ser Asp Ser Arg Ala Glu Thr Val Val Ser Gly Gly Ile Ser
 115 120 125
 Arg Ser Ile Thr Asn Ser Lys Asn Gly Thr Gln Asn Thr Glu Asp Ile
 130 135 140
 Asp Leu Asn Glu Ile Arg Lys Met Asp Lys Asp Ser Ile Glu Gly Lys
 145 150 155 160
 Val Arg Gln Ser Ala Asp Val Pro Ser Glu Ile Ser Gly Ser Asp Val
 165 170 175
 Ile Phe Thr Thr Glu Gln Ser Arg Asn Ser Asp His Gly Arg Ser Leu
 180 185 190
 Glu Ser Ile Ser Thr Pro Asp Thr Arg Ser Ile Ser Val Val Thr Ala
 195 200 205
 Ala Thr Pro Asp Asp Glu Glu Glu Ile Leu Met Lys Asn Ser Arg Thr
 210 215 220
 Lys Lys Ser Ser Ser Ile His Gln Glu Asp Asp Lys Arg Ile Lys Lys
 225 230 235 240
 Gly Gly Glu Lys Gly Lys Thr Gly Leu Arg Asn Gln Lys Ile Leu Thr
 245 250 255
 Thr Arg Tyr Gln His Gln Thr Thr Asp Pro His Gln Lys Gly Arg Arg
 260 265 270
 Lys Ser Gln Lys Gln Gln Pro Ser Thr Pro Thr Gln Arg Gly Lys Gln
 275 280 285
 Lys Tyr Arg Gln Asn His Gln Glu His Asn Pro His His Gly Ile Ser
 290 295 300
 Pro Leu Ile Thr Thr Gln Ile Glu Pro Asn Arg Gln Thr Gln Leu Pro
 305 310 315 320
 Gln Gln Gln Pro Pro Asp Gln Leu Ile Gln Lys Asn Gln Ser Glu Gln

325	330	335	
Thr Leu Asp Pro Asn Pro Arg His	Lys Arg Gln Met Glu Arg Lys Gly		
340	345	350	
Arg Ile Gln Lys Arg Ala Ile Asp	Leu Gln Arg Gly Gln Leu Leu Tyr		
355	360	365	
Cys Arg Ile Leu Val			
370			
<210> 417			
<211> 574			
<212> PRT			
<213> Human parainfluenza virus 3			
<220>			
<223> hemagglutinin-neuraminidase of Human parainfluenza virus 3			
<400> 417			
Met Glu Tyr Trp Lys His Thr Asn His	Gly Lys Asp Ala Gly Asn Glu		
1	5	10	15
Leu Glu Thr Ser Met Ala Thr His	Asn Asn Lys Leu Thr Asn Lys Ile		
20	25	30	
Ile Tyr Ile Leu Trp Thr Ile	Ile Leu Val Leu Leu Ser Ile Val Phe		
35	40	45	
Ile Ile Val Leu Ile Asn Ser Ile	Asn Ser Glu Lys Val His Asn Ser		
50	55	60	
Leu Leu Gln Glu Ile Asn Asn	Glu Phe Met Glu Ile Thr Glu Lys Ile		
65	70	75	80
Gln Met Ala Ser Asp Asn Thr Asn Asp	Leu Ile Gln Ser Gly Val Asn		
85	90	95	
Thr Arg Leu Leu Thr Ile Gln Ser	His Val Gln Asn Tyr Ile Pro Ile		
100	105	110	
Ser Leu Thr Gln Gln Met Ser Asp	Leu Arg Lys Phe Ile Ser Glu Ile		
115	120	125	
Thr Ile Arg Asn Asp Asn Gln	Glu Val Pro Gln Gln Arg Ile Thr His		
130	135	140	
Asp Val Gly Ile Lys Pro Leu Asn Pro Asp	Asp Phe Trp Arg Cys Thr		
145	150	155	160
Ser Gly Leu Pro Phe Leu Met Arg Asn	Pro Lys Ile Arg Leu Met Pro		
165	170	175	
Gly Pro Gly Leu Leu Ala Met Pro	Thr Thr Val Asp Gly Cys Val Arg		
180	185	190	
Thr Pro Ser Leu Ile Ile Asn Asp	Leu Ile Tyr Ala Tyr Thr Ser Asn		
195	200	205	
Leu Ile Thr Arg Gly Cys Gln Asp	Ile Gly Lys Ser Tyr Gln Val Leu		
210	215	220	
Gln Val Gly Ile Ile Thr Val Asn Ser	Asp Leu Val Pro Asp Leu Asn		
225	230	235	240
Pro Arg Phe Ser His Thr Phe Asn	Ile Asn Asp Asn Arg Lys Ser Cys		
245	250	255	
Ser Leu Ala Leu Leu Asn Thr Asp	Val Tyr Gln Leu Cys Ser Thr Pro		
260	265	270	
Lys Val Asp Glu Arg Ser Asp	Tyr Ala Ser Ser Gly Ile Glu Asp Ile		
275	280	285	
Val Leu Asp Ile Val Asn Tyr Asp	Gly Ser Ile Ser Thr Thr Arg Phe		
290	295	300	
Lys Asn Asn Asn Ile Ser Phe Asp	Gln Pro Tyr Ala Ala Leu Tyr Pro		
305	310	315	320
Ser Val Gly Pro Gly Ile Tyr Tyr	Lys Gly Lys Ile Ile Phe Leu Gly		
325	330	335	
Tyr Gly Gly Leu Glu His Pro Ile	Asn Glu Asn Val Ile Cys Asn Thr		
340	345	350	

Thr Glu Cys Pro Gly Lys Thr Gln Arg Asp Cys Asn Gln Ala Ser Tyr
 355 360 365
 Ser Pro Trp Phe Ser Asp Arg Arg Met Val Asn Ser Ile Ile Val Val
 370 375 380
 Asp Lys Gly Leu Asn Ser Ile Pro Lys Leu Lys Val Trp Thr Ile Ser
 385 390 395 400
 Met Arg Gln Asn Tyr Trp Gly Ser Glu Gly Arg Leu Ile Leu Gly
 405 410 415
 Asn Lys Ile Tyr Ile Tyr Thr Arg Ser Thr Ser Trp His Ser Lys Leu
 420 425 430
 Gln Leu Gly Ile Ile Asp Ile Thr Asp Tyr Ser Asp Ile Arg Ile Lys
 435 440 445
 Trp Thr Trp His Asn Val Leu Ser Arg Pro Gly Asn Asp Glu Cys Pro
 450 455 460
 Trp Gly His Ser Cys Pro Asn Gly Cys Ile Thr Gly Val Tyr Thr Asp
 465 470 475 480
 Ala Tyr Pro Leu Asn Pro Thr Gly Ser Ile Val Ser Ser Val Ile Leu
 485 490 495
 Asp Ser Gln Lys Ser Arg Val Asn Pro Val Ile Thr Tyr Ser Thr Ala
 500 505 510
 Thr Glu Arg Val Asn Glu Leu Ala Ile Arg Asn Arg Thr Leu Ser Ala
 515 520 525
 Gly Tyr Thr Thr Ser Cys Ile Thr His Tyr Asp Lys Gly Tyr Cys
 530 535 540
 Phe His Ile Val Glu Ile Asn Gln Lys Ser Ser Asn Thr Phe Gln Pro
 545 550 555 560
 Met Leu Phe Lys Thr Glu Ile Pro Lys Ser Cys Ser Gln Ser
 565 570

<210> 418
 <211> 515
 <212> PRT
 <213> Human parainfluenza virus 3

<220>
 <223> nucleocapsid protein of Human parainfluenza virus 3

<400> 418
 Met Leu Ser Leu Phe Asp Thr Phe Asn Ala Arg Arg Gln Glu Asn Ile
 1 5 10 15
 Thr Lys Ser Ala Gly Gly Ala Ile Ile Pro Gly Gln Lys Asn Thr Val
 20 25 30
 Ser Ile Phe Ala Leu Gly Pro Thr Ile Thr Asp Asp Asn Glu Lys Met
 35 40 45
 Thr Leu Ala Leu Leu Phe Leu Ser His Ser Leu Asp Asn Glu Lys Gln
 50 55 60
 His Ala Gln Arg Ala Gly Phe Leu Val Ser Leu Leu Ser Met Ala Tyr
 65 70 75 80
 Ala Asn Pro Glu Leu Tyr Leu Thr Thr Asn Gly Ser Asn Ala Asp Val
 85 90 95
 Lys Tyr Val Ile Tyr Met Ile Glu Lys Asp Leu Lys Arg Gln Lys Tyr
 100 105 110
 Gly Gly Phe Val Val Lys Thr Arg Glu Met Val Tyr Asp Lys Thr Thr
 115 120 125
 Asp Trp Ile Phe Gly Ser Asp Leu Asp Cys Asp Gln Glu Thr Met Leu
 130 135 140
 Gln Asn Gly Arg Asn Asn Ser Thr Ile Glu Asp Leu Val His Thr Phe
 145 150 155 160
 Gly Tyr Pro Ser Cys Leu Gly Ala Leu Ile Ile Gln Ile Trp Ile Val
 165 170 175

Leu Val Lys Ala Ile Thr Ser Ile Ser Gly Leu Arg Lys Gly Phe Phe
 180 185 190
 Thr Arg Leu Glu Ala Phe Arg Gln Asp Gly Thr Val Gln Ala Gly Leu
 195 200 205
 Val Leu Ser Gly Asp Thr Val Asp Gln Ile Gly Ser Ile Met Arg Ser
 210 215 220
 Gln Gln Ser Leu Val Thr Leu Met Val Glu Thr Leu Ile Thr Met Asn
 225 230 235 240
 Thr Ser Arg Asn Asp Leu Thr Thr Ile Glu Lys Asn Ile Gln Ile Val
 245 250 255
 Gly Asn Tyr Ile Arg Asp Ala Gly Leu Ala Ser Phe Phe Asn Thr Ile
 260 265 270
 Arg Tyr Gly Ile Glu Thr Arg Met Ala Ala Leu Thr Leu Ser Thr Leu
 275 280 285
 Arg Pro Asp Ile Asn Arg Leu Lys Ala Leu Met Glu Leu Tyr Leu Ser
 290 295 300
 Lys Gly Pro Arg Ala Pro Phe Ile Cys Ile Leu Arg Asp Pro Ile His
 305 310 315 320
 Gly Glu Phe Ala Pro Gly Asn Tyr Pro Ala Ile Trp Ser Tyr Ala Met
 325 330 335
 Gly Val Ala Val Val Gln Asn Arg Ala Met Gln Gln Tyr Val Thr Gly
 340 345 350
 Arg Ser Tyr Leu Asp Ile Asp Met Phe Gln Leu Gly Gln Ala Val Ala
 355 360 365
 Arg Asp Ala Glu Ala Gln Met Ser Ser Thr Leu Glu Asp Glu Leu Gly
 370 375 380
 Val Thr His Glu Ala Lys Glu Ser Leu Lys Arg His Ile Arg Asn Ile
 385 390 395 400
 Asn Ser Ser Glu Thr Ser Phe His Lys Pro Thr Gly Gly Ser Ala Ile
 405 410 415
 Glu Met Ala Ile Asp Glu Glu Pro Glu Gln Phe Glu His Arg Ser Asp
 420 425 430
 Gln Glu Arg Asp Gly Glu Pro Gln Ser Ser Ile Ile Gln Tyr Ala Trp
 435 440 445
 Ala Glu Gly Asn Arg Ser Asp Asp Arg Thr Glu Gln Asp Thr Glu Ser
 450 455 460
 Asp Asn Ile Lys Thr Glu Gln Gln Asn Ile Arg Asp Arg Leu Asn Lys
 465 470 475 480
 Arg Leu Asn Glu Lys Lys Lys Gln Gly Ser Gln Pro Pro Thr Asn Pro
 485 490 495
 Thr Asn Arg Thr Asn Gln Asp Glu Ile Asp Asp Leu Phe Asn Ala Phe
 500 505 510
 Gly Ser Asn
 515

<210> 419
 <211> 395
 <212> PRT
 <213> Human parainfluenza virus 2

<220>
 <223> P protein of Human parainfluenza virus 2

<400> 419
 Met Ala Glu Glu Pro Thr Tyr Thr Glu Gln Val Asp Glu Leu Ile
 1 5 10 15
 His Ala Gly Leu Gly Thr Val Asp Phe Phe Leu Ser Arg Pro Ile Asp
 20 25 30
 Ala Gln Ser Ser Leu Gly Lys Gly Ser Ile Pro Pro Gly Val Thr Ala
 35 40 45

Val Leu Thr Ser Ala Ala Glu Thr Lys Ser Lys Pro Val Ala Ala Gly
 50 55 60
 Pro Val Lys Pro Arg Arg Lys Lys Val Ile Ser Asn Thr Thr Pro Tyr
 65 70 75 80
 Thr Ile Ala Asp Asn Ile Pro Pro Glu Lys Leu Pro Ile Asn Thr Pro
 85 90 95
 Ile Pro Asn Pro Leu Leu Pro Leu Ala Arg Pro His Gly Lys Met Thr
 100 105 110
 Asp Ile Asp Ile Val Thr Gly Asn Ile Thr Glu Gly Ser Tyr Lys Gly
 115 120 125
 Val Glu Leu Ala Lys Leu Gly Lys Gln Thr Leu Leu Thr Arg Phe Thr
 130 135 140
 Ser Asn Glu Pro Val Ser Ser Ala Gly Ser Ala Gln Asp Pro Asn Phe
 145 150 155 160
 Lys Arg Gly Gly Glu Leu Ile Glu Lys Glu Gln Glu Ala Thr Ile Gly
 165 170 175
 Glu Asn Gly Val Leu His Gly Ser Glu Ile Arg Ser Lys Ser Ser Ser
 180 185 190
 Gly Val Ile Pro Gly Val Pro Gln Ser Arg Pro Gln Leu Ala Ser Ser
 195 200 205
 Pro Ala His Ala Asp Pro Ala Pro Ala Ser Ala Glu Asn Val Lys Glu
 210 215 220
 Ile Ile Glu Leu Leu Lys Gly Leu Asp Leu Arg Leu Gln Thr Val Glu
 225 230 235 240
 Gly Lys Val Asp Lys Ile Leu Ala Thr Ser Ala Thr Ile Ile Asn Leu
 245 250 255
 Lys Asn Glu Met Thr Ser Leu Lys Ala Ser Val Ala Thr Met Glu Gly
 260 265 270
 Met Ile Thr Thr Ile Lys Ile Met Asp Pro Ser Thr Pro Thr Asn Val
 275 280 285
 Pro Val Glu Glu Ile Arg Lys Ser Leu His Asn Val Pro Val Val Ile
 290 295 300
 Ala Gly Pro Thr Ser Gly Gly Phe Thr Ala Glu Gln Val Ile Leu Ile
 305 310 315 320
 Ser Met Asp Glu Leu Ala Arg Pro Thr Leu Ser Ser Thr Lys Arg Ile
 325 330 335
 Thr Arg Lys Pro Glu Ser Lys Lys Asp Leu Thr Gly Ile Lys Leu Thr
 340 345 350
 Leu Met Gln Leu Ala Asn Asp Cys Ile Ser Arg Pro Asp Thr Lys Thr
 355 360 365
 Glu Phe Val Thr Lys Ile Gln Ala Ala Thr Thr Glu Ser Gln Leu Asn
 370 375 380
 Glu Ile Lys Arg Ser Ile Ile Arg Ser Ala Ile
 385 390 395

<210> 420

<211> 539

<212> PRT

<213> Human parainfluenza virus

<220>

<223> F protein of Human parainfluenza virus

<400> 420

Met Ser Trp Lys Val Val Ile Ile Phe Ser Leu Leu Ile Thr Pro Gln
 1 5 10 15
 His Gly Leu Lys Glu Ser Tyr Leu Glu Glu Ser Cys Ser Thr Ile Thr
 20 25 30
 Glu Gly Tyr Leu Ser Val Leu Arg Thr Gly Trp Tyr Thr Asn Val Phe
 35 40 45

Thr Leu Glu Val Gly Asp Val Glu Asn Leu Thr Cys Ala Asp Gly Pro
 50 55 60
 Ser Leu Ile Lys Thr Glu Leu Asp Leu Thr Lys Ser Ala Leu Arg Glu
 65 70 75 80
 Leu Arg Thr Val Ser Ala Asp Gln Leu Ala Arg Glu Glu Gln Ile Glu
 85 90 95
 Asn Pro Arg Gln Ser Arg Phe Val Leu Gly Ala Ile Ala Leu Gly Val
 100 105 110
 Ala Thr Ala Ala Ala Val Thr Ala Gly Val Ala Ile Ala Lys Thr Ile
 115 120 125
 Arg Leu Glu Ser Glu Val Thr Ala Ile Lys Asn Ala Leu Lys Lys Thr
 130 135 140
 Asn Glu Ala Val Ser Thr Leu Gly Asn Gly Val Arg Val Leu Ala Thr
 145 150 155 160
 Ala Val Arg Glu Leu Lys Asp Phe Val Ser Lys Asn Leu Thr Arg Ala
 165 170 175
 Ile Asn Lys Asn Lys Cys Asp Ile Ala Asp Leu Lys Met Ala Val Ser
 180 185 190
 Phe Ser Gln Phe Asn Arg Arg Phe Leu Asn Val Val Arg Gln Phe Ser
 195 200 205
 Asp Asn Ala Gly Ile Thr Pro Ala Ile Ser Leu Asp Leu Met Thr Asp
 210 215 220
 Ala Glu Leu Ala Arg Ala Val Ser Asn Met Pro Thr Ser Ala Gly Gln
 225 230 235 240
 Ile Lys Leu Met Leu Glu Asn Arg Ala Met Val Arg Arg Lys Gly Phe
 245 250 255
 Gly Phe Leu Ile Gly Val Tyr Gly Ser Ser Val Ile Tyr Met Val Gln
 260 265 270
 Leu Pro Ile Phe Gly Val Ile Asp Thr Pro Cys Trp Ile Val Lys Ala
 275 280 285
 Ala Pro Ser Cys Ser Gly Lys Lys Gly Asn Tyr Ala Cys Leu Leu Arg
 290 295 300
 Glu Asp Gln Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr
 305 310 315 320
 Pro Asn Glu Lys Asp Cys Glu Thr Arg Gly Asp His Val Phe Cys Asp
 325 330 335
 Thr Ala Ala Gly Ile Asn Val Ala Glu Gln Ser Lys Glu Cys Asn Ile
 340 345 350
 Asn Ile Ser Thr Thr Asn Tyr Pro Cys Lys Val Ser Thr Gly Arg His
 355 360 365
 Pro Ile Ser Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys
 370 375 380
 Tyr Lys Gly Val Ser Cys Ser Ile Gly Ser Asn Arg Val Gly Ile Ile
 385 390 395 400
 Lys Gln Leu Asn Lys Gly Cys Ser Tyr Ile Thr Asn Gln Asp Ala Asp
 405 410 415
 Thr Val Thr Ile Asp Asn Thr Val Tyr Gln Leu Ser Lys Val Glu Gly
 420 425 430
 Glu Gln His Val Ile Lys Gly Arg Pro Val Ser Ser Phe Asp Pro
 435 440 445
 Val Lys Phe Pro Glu Asp Gln Phe Asn Val Ala Leu Asp Gln Val Phe
 450 455 460
 Glu Ser Ile Glu Asn Ser Gln Ala Leu Val Asp Gln Ser Asn Arg Ile
 465 470 475 480
 Leu Ser Ser Ala Glu Lys Gly Asn Thr Gly Phe Ile Ile Val Ile Ile
 485 490 495
 Leu Ile Ala Val Leu Gly Ser Thr Met Ile Leu Val Ser Val Phe Ile
 500 505 510
 Ile Ile Lys Lys Thr Lys Lys Pro Thr Gly Ala Pro Pro Glu Leu Ser
 515 520 525
 Gly Val Thr Asn Asn Gly Phe Ile Pro His Asn

<210> 421
 <211> 236
 <212> PRT
 <213> Human parainfluenza virus

<220>
 <223> G protein of Human parainfluenza virus

<400> 421
 Met Glu Val Lys Val Glu Asn Ile Arg Thr Ile Asp Met Leu Lys Ala
 1 5 10 15
 Arg Val Lys Asn Arg Val Ala Arg Ser Lys Cys Phe Lys Asn Ala Ser
 20 25 30
 Leu Val Leu Ile Gly Ile Thr Thr Leu Ser Ile Ala Leu Asn Ile Tyr
 35 40 45
 Leu Ile Ile Asn Tyr Lys Met Gln Lys Asn Thr Ser Glu Ser Glu His
 50 55 60
 His Thr Ser Ser Ser Pro Met Glu Ser Ser Arg Glu Thr Pro Thr Val
 65 70 75 80
 Pro Thr Asp Asn Ser Asp Thr Asn Ser Ser Pro Gln His Pro Thr Gln
 85 90 95
 Gln Ser Thr Glu Gly Ser Thr Leu Tyr Phe Ala Ala Ser Ala Ser Ser
 100 105 110
 Pro Glu Thr Glu Pro Thr Ser Thr Pro Asp Thr Thr Asn Arg Pro Pro
 115 120 125
 Phe Val Asp Thr His Thr Thr Pro Pro Ser Ala Ser Arg Thr Lys Thr
 130 135 140
 Ser Pro Ala Val His Thr Lys Asn Asn Pro Arg Thr Ser Ser Arg Thr
 145 150 155 160
 His Ser Pro Pro Arg Ala Thr Thr Arg Thr Ala Arg Arg Thr Thr
 165 170 175
 Leu Arg Thr Ser Thr Arg Lys Arg Pro Ser Thr Ala Ser Val Gln
 180 185 190
 Pro Asp Ile Ser Ala Thr Thr His Lys Asn Glu Glu Ala Ser Pro Ala
 195 200 205
 Ser Pro Gln Thr Ser Ala Ser Thr Thr Arg Ile Gln Arg Lys Ser Val
 210 215 220
 Glu Ala Asn Thr Ser Thr Tyr Asn Gln Thr Ser
 225 230 235

<210> 422
 <211> 120
 <212> PRT
 <213> Homo sapiens

<400> 422
 Gln Val Thr Leu Arg Glu Ser Gly Pro Ala Leu Val Lys Pro Thr Gln
 1 5 10 15
 Thr Leu Thr Leu Thr Cys Thr Phe Ser Gly Phe Ser Leu Ser Thr Ala
 20 25 30
 Gly Met Ser Val Gly Trp Ile Arg Gln Pro Pro Gly Lys Ala Leu Glu
 35 40 45
 Trp Leu Ala Asp Ile Trp Trp Asp Asp Lys Lys His Tyr Asn Pro Ser
 50 55 60
 Leu Lys Asp Arg Leu Thr Ile Ser Lys Asp Thr Ser Lys Asn Gln Val
 65 70 75 80
 Val Leu Lys Val Thr Asn Met Asp Pro Ala Asp Thr Ala Thr Tyr Tyr

	85	90	95												
Cys	Ala	Arg	Asp	Met	Ile	Phe	Asn	Phe	Tyr	Phe	Asp	Val	Trp	Gly	Gln
				100				105					110		
Gly	Thr	Thr	Val	Thr	Val	Ser	Ser								
			115			120									

<210> 423
<211> 106
<212> PRT
<213> Homo sapiens

<400> 423															
Asp	Ile	Gln	Met	Thr	Gln	Ser	Pro	Ser	Thr	Leu	Ser	Ala	Ser	Val	Gly
1				5				10					15		
Asp	Arg	Val	Thr	Ile	Thr	Cys	Ser	Ala	Ser	Ser	Arg	Val	Gly	Tyr	Met
				20				25				30			
His	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Lys	Ala	Pro	Lys	Leu	Leu	Ile	Tyr
				35				40			45				
Asp	Thr	Leu	Leu	Leu	Asp	Ser	Gly	Val	Pro	Ser	Arg	Phe	Ser	Gly	Ser
				50				55			60				
Gly	Ser	Gly	Thr	Glu	Phe	Thr	Leu	Thr	Ile	Ser	Ser	Leu	Gln	Pro	Asp
				65			70			75			80		
Asp	Phe	Ala	Thr	Tyr	Tyr	Cys	Phe	Gln	Gly	Ser	Gly	Tyr	Pro	Phe	Thr
				85			90			95					
Phe	Gly	Gly	Gly	Thr	Lys	Leu	Glu	Ile	Lys						
				100			105								

<210> 424
<211> 532
<212> PRT
<213> Avian pneumovirus

<220>
<223> Avian pneumovirus fusion protein gene

<400> 424															
Met	Ser	Trp	Lys	Val	Val	Leu	Leu	Leu	Val	Leu	Leu	Ala	Thr	Pro	Thr
1				5				10					15		
Gly	Gly	Leu	Glu	Glu	Ser	Tyr	Leu	Glu	Glu	Ser	Cys	Ser	Thr	Val	Thr
				20				25			30				
Arg	Gly	Tyr	Leu	Ser	Val	Leu	Arg	Thr	Gly	Trp	Tyr	Thr	Asn	Val	Phe
				35			40			45					
Thr	Leu	Gly	Val	Gly	Asp	Val	Lys	Asn	Leu	Thr	Cys	Thr	Asp	Gly	Pro
				50			55			60					
Ser	Leu	Ile	Arg	Thr	Glu	Leu	Glu	Leu	Thr	Lys	Asn	Ala	Leu	Glu	Glu
				65			70			75			80		
Leu	Lys	Thr	Val	Ser	Ala	Asp	Gln	Leu	Ala	Lys	Glu	Ala	Arg	Ile	Met
				85			90			95					
Ser	Pro	Arg	Lys	Ala	Arg	Phe	Val	Leu	Gly	Ala	Ile	Ala	Leu	Gly	Val
				100			105			110					
Ala	Thr	Ala	Ala	Ala	Val	Thr	Ala	Gly	Val	Ala	Ile	Ala	Lys	Thr	Ile
				115			120			125					
Arg	Leu	Glu	Gly	Glu	Val	Ala	Ala	Ile	Lys	Gly	Ala	Leu	Arg	Lys	Thr
				130			135			140					
Asn	Glu	Ala	Val	Ser	Thr	Leu	Gly	Asn	Gly	Val	Arg	Val	Leu	Ala	Thr
				145			150			155			160		
Ala	Val	Asn	Asp	Leu	Lys	Asp	Phe	Ile	Ser	Lys	Lys	Leu	Thr	Pro	Ala
				165			170			175					
Ile	Asn	Arg	Asn	Lys	Cys	Asp	Ile	Ser	Asp	Leu	Lys	Met	Ala	Val	Ser

180	185	190	
Phe Gly Gln Tyr Asn Arg Arg	Phe Leu Asn Val Val	Arg Gln Phe Ser	
195	200	205	
Asp Asn Ala Gly Ile Thr Pro	Ala Ile Ser Leu Asp	Leu Met Thr Asp	
210	215	220	
Ala Glu Leu Val Arg Ala Val Ser Asn Met	Pro Thr Ser Ser Gly	Gln	
225	230	235	240
Ile Asn Leu Met Leu Glu Asn Arg Ala Met	Val Arg Arg Lys Gly	Phe	
245	250	255	
Gly Ile Leu Ile Gly Val Tyr Gly	Ser Ser Val Val Tyr	Ile Val Gln	
260	265	270	
Leu Pro Ile Phe Gly Val Ile Asp Thr Pro Cys	Trp Arg Val Lys Ala		
275	280	285	
Ala Pro Leu Cys Ser Gly Lys Asp Gly Asn Tyr	Ala Cys Leu Leu Arg		
290	295	300	
Glu Asp Gln Gly Trp Tyr Cys Gln Asn Ala	Gly Ser Thr Val Tyr	Tyr	
305	310	315	320
Pro Asn Glu Glu Asp Cys Glu Val Arg Ser Asp His	Val Phe Cys Asp		
325	330	335	
Thr Ala Ala Gly Ile Asn Val Ala Lys Glu Ser Glu	Glu Cys Asn Arg		
340	345	350	
Asn Ile Ser Thr Thr Lys Tyr Pro Cys Lys Val Ser	Thr Gly Arg His		
355	360	365	
Pro Ile Ser Met Val Ala Leu Ser Pro Leu Gly	Ala Leu Val Ala Cys		
370	375	380	
Tyr Asp Gly Met Ser Cys Ser Ile Gly Ser Asn Lys	Val Gly Ile Ile		
385	390	395	400
Arg Pro Leu Gly Lys Gly Cys Ser Tyr Ile Ser Asn Gln	Asp Ala Asp		
405	410	415	
Thr Val Thr Ile Asp Asn Thr Val Tyr Gln Leu Ser Lys	Val Glu Gly		
420	425	430	
Glu Gln His Thr Ile Lys Gly Lys Pro Val Ser Ser	Asn Phe Asp Pro		
435	440	445	
Ile Glu Phe Pro Glu Asp Gln Phe Asn Val Ala Leu	Asp Gln Val Phe		
450	455	460	
Glu Ser Val Glu Lys Ser Gln Asn Leu Ile Asp Gln	Ser Asn Lys Ile		
465	470	475	480
Leu Asp Ser Ile Glu Lys Gly Asn Ala Gly Phe Val	Ile Val Ile Val		
485	490	495	
Leu Ile Val Leu Leu Met Leu Ala Ala Val Gly Val	Gly Val Phe Phe		
500	505	510	
Val Val Lys Lys Arg Lys Ala Ala Pro Lys Phe Pro	Met Glu Met Asn		
515	520	525	
Gly Val Asn Asn			
530			

<210> 425
<211> 537
<212> PRT
<213> Avian pneumovirus

<220>
<223> Avian pneumovirus isolate 1b fusion protein mRNA

```

<400> 425
Met Ser Trp Lys Val Val Leu Leu Leu Val Leu Leu Ala Thr Pro Thr
      1           5           10           15
Gly Gly Leu Glu Glu Ser Tyr Leu Glu Glu Ser Cys Ser Thr Val Thr
      20          25          30
Arg Gly Tyr Leu Ser Val Leu Arg Thr Gly Trp Tyr Thr Asn Val Phe

```

35	40	45														
Thr	Leu	Glu	Val	Gly	Asp	Val	Glu	Asn	Leu	Thr	Cys	Thr	Asp	Gly	Pro	
50						55				60						
Ser	Leu	Ile	Arg	Thr	Glu	Leu	Glu	Leu	Thr	Lys	Asn	Ala	Leu	Glu	Glu	
65						70				75					80	
Leu	Lys	Thr	Val	Ser	Ala	Asp	Gln	Leu	Ala	Lys	Glu	Ala	Arg	Ile	Met	
						85				90					95	
Ser	Pro	Arg	Lys	Ala	Arg	Phe	Val	Leu	Gly	Ala	Ile	Ala	Leu	Gly	Val	
						100				105					110	
Ala	Thr	Ala	Ala	Ala	Val	Thr	Ala	Gly	Val	Ala	Ile	Ala	Lys	Thr	Ile	
						115				120					125	
Arg	Leu	Glu	Gly	Glu	Val	Ala	Ala	Ile	Lys	Gly	Ala	Leu	Arg	Lys	Thr	
						130				135					140	
Asn	Glu	Ala	Ala	Val	Ser	Thr	Leu	Gly	Asn	Gly	Val	Arg	Val	Leu	Ala	Thr
145						150				155					160	
Ala	Val	Asn	Asp	Leu	Lys	Asp	Phe	Ile	Ser	Lys	Lys	Leu	Thr	Pro	Ala	
						165				170					175	
Ile	Asn	Arg	Asn	Lys	Cys	Asp	Ile	Ser	Asp	Leu	Lys	Met	Ala	Val	Ser	
						180				185					190	
Phe	Gly	Gln	Tyr	Asn	Arg	Arg	Phe	Leu	Asn	Val	Val	Arg	Gln	Phe	Ser	
						195				200					205	
Asp	Asn	Ala	Gly	Ile	Thr	Pro	Ala	Ile	Ser	Leu	Asp	Leu	Met	Thr	Asp	
						210				215					220	
Ala	Glu	Leu	Val	Arg	Ala	Val	Ser	Asn	Met	Pro	Thr	Ser	Ser	Gly	Gln	
225						230				235					240	
Ile	Asn	Leu	Met	Leu	Glu	Asn	Arg	Ala	Met	Val	Arg	Arg	Lys	Gly	Phe	
						245				250					255	
Gly	Ile	Leu	Ile	Gly	Val	Tyr	Gly	Ser	Ser	Val	Val	Tyr	Ile	Val	Gln	
						260				265					270	
Leu	Pro	Ile	Phe	Gly	Val	Ile	Asp	Thr	Pro	Cys	Trp	Lys	Val	Lys	Ala	
						275				280					285	
Ala	Pro	Leu	Cys	Ser	Gly	Lys	Asp	Gly	Asn	Tyr	Ala	Cys	Leu	Leu	Arg	
						290				295					300	
Glu	Asp	Gln	Gly	Trp	Tyr	Cys	Gln	Asn	Ala	Gly	Ser	Thr	Val	Tyr	Tyr	
305						310				315					320	
Pro	Asn	Glu	Glu	Asp	Cys	Glu	Val	Arg	Ser	Asp	His	Val	Phe	Cys	Asp	
						325				330					335	
Thr	Ala	Ala	Gly	Ile	Asn	Val	Ala	Lys	Glu	Ser	Glu	Glu	Cys	Asn	Arg	
						340				345					350	
Asn	Ile	Ser	Thr	Thr	Lys	Tyr	Pro	Cys	Lys	Val	Ser	Thr	Gly	Arg	His	
						355				360					365	
Pro	Ile	Ser	Met	Val	Ala	Leu	Ser	Pro	Leu	Gly	Ala	Leu	Val	Ala	Cys	
						370				375					380	
Tyr	Asp	Gly	Met	Ser	Cys	Ser	Ile	Gly	Ser	Asn	Lys	Val	Gly	Ile	Ile	
385						390				395					400	
Arg	Pro	Leu	Gly	Lys	Gly	Cys	Ser	Tyr	Ile	Ser	Asn	Gln	Asp	Ala	Asp	
						405				410					415	
Thr	Val	Thr	Ile	Asp	Asn	Thr	Val	Tyr	Gln	Leu	Ser	Lys	Val	Glu	Gly	
						420				425					430	
Glu	Gln	His	Thr	Ile	Lys	Gly	Lys	Pro	Val	Ser	Ser	Asn	Phe	Asp	Pro	
						435				440					445	
Ile	Glu	Phe	Pro	Glu	Asp	Gln	Phe	Asn	Val	Ala	Leu	Asp	Gln	Val	Phe	
						450				455					460	
Glu	Ser	Val	Glu	Lys	Ser	Gln	Asn	Leu	Ile	Asp	Gln	Ser	Asn	Lys	Ile	
465						470				475					480	
Leu	Asp	Ser	Ile	Glu	Lys	Gly	Asn	Ala	Gly	Phe	Val	Ile	Val	Ile	Val	
						485				490					495	
Leu	Ile	Val	Leu	Leu	Met	Leu	Ala	Ala	Val	Gly	Val	Gly	Val	Phe	Phe	
						500				505					510	
Val	Val	Lys	Lys	Arg	Lys	Ala	Ala	Pro	Lys	Phe	Pro	Met	Glu	Met	Asn	
						515				520					525	

Gly Val Asn Asn Lys Gly Phe Ile Pro
 530 535

<210> 426
 <211> 538
 <212> PRT
 <213> Turkey rhinotracheitis virus

<220>
 <223> Turkey rhinotracheitis virus gene for fusion
 protein (F1 and F2 subunits), complete cds

<400> 426
 Met Asp Val Arg Ile Cys Leu Leu Leu Phe Leu Ile Ser Asn Pro Ser
 1 5 10 15
 Ser Cys Ile Gln Glu Thr Tyr Asn Glu Glu Ser Cys Ser Thr Val Thr
 20 25 30
 Arg Gly Tyr Lys Ser Val Leu Arg Thr Gly Trp Tyr Thr Asn Val Phe
 35 40 45
 Asn Leu Glu Ile Gly Asn Val Glu Asn Ile Thr Cys Asn Asp Gly Pro
 50 55 60
 Ser Leu Ile Asp Thr Glu Leu Val Leu Thr Lys Asn Ala Leu Arg Glu
 65 70 75 80
 Leu Lys Thr Val Ser Ala Asp Gln Val Ala Lys Glu Ser Arg Leu Ser
 85 90 95
 Ser Pro Arg Arg Arg Arg Phe Val Leu Gly Ala Ile Ala Leu Gly Val
 100 105 110
 Ala Thr Ala Ala Ala Val Thr Ala Gly Val Ala Leu Ala Lys Thr Ile
 115 120 125
 Arg Leu Glu Gly Glu Val Lys Ala Ile Lys Asn Ala Leu Arg Asn Thr
 130 135 140
 Asn Glu Ala Val Ser Thr Leu Gly Asn Gly Val Arg Val Leu Ala Thr
 145 150 155 160
 Ala Val Asn Asp Leu Lys Glu Phe Ile Ser Lys Lys Leu Thr Pro Ala
 165 170 175
 Ile Asn Gln Asn Lys Cys Asn Ile Ala Asp Ile Lys Met Ala Ile Ser
 180 185 190
 Phe Gly Gln Asn Asn Arg Arg Phe Leu Asn Val Val Arg Gln Phe Ser
 195 200 205
 Asp Ser Ala Gly Ile Thr Ser Ala Val Ser Leu Asp Leu Met Thr Asp
 210 215 220
 Asp Glu Leu Val Arg Ala Ile Asn Arg Met Pro Thr Ser Ser Gly Gln
 225 230 235 240
 Ile Ser Leu Met Leu Asn Asn Arg Ala Met Val Arg Arg Lys Gly Phe
 245 250 255
 Gly Ile Leu Ile Gly Val Tyr Asp Gly Thr Val Val Tyr Met Val Gln
 260 265 270
 Leu Pro Ile Phe Gly Val Ile Glu Thr Pro Cys Trp Arg Val Val Ala
 275 280 285
 Ala Pro Leu Cys Arg Lys Glu Lys Gly Asn Tyr Ala Cys Ile Leu Arg
 290 295 300
 Glu Asp Gln Gly Trp Tyr Cys Thr Asn Ala Gly Ser Thr Ala Tyr Tyr
 305 310 315 320
 Pro Asn Lys Asp Asp Cys Glu Val Arg Asp Asp Tyr Val Phe Cys Asp
 325 330 335
 Thr Ala Ala Gly Ile Asn Val Ala Leu Glu Val Glu Gln Cys Asn Tyr
 340 345 350
 Asn Ile Ser Thr Ser Lys Tyr Pro Cys Lys Val Ser Thr Gly Arg His
 355 360 365
 Pro Val Ser Met Val Ala Leu Thr Pro Leu Gly Gly Leu Val Ser Cys
 370 375 380

Tyr Glu Ser Val Ser Cys Ser Ile Gly Ser Asn Lys Val Gly Ile Ile
 385 390 395 400
 Lys Gln Leu Gly Lys Gly Cys Thr His Ile Pro Asn Asn Glu Ala Asp
 405 410 415
 Thr Ile Thr Ile Asp Asn Thr Val Tyr Gln Leu Ser Lys Val Val Gly
 420 425 430
 Glu Gln Arg Thr Ile Lys Gly Ala Pro Val Val Asn Asn Phe Asn Pro
 435 440 445
 Ile Leu Phe Pro Glu Asp Gln Phe Asn Val Ala Leu Asp Gln Val Phe
 450 455 460
 Glu Ser Ile Asp Arg Ser Gln Asp Leu Ile Asp Lys Ser Asn Asp Leu
 465 470 475 480
 Leu Gly Ala Asp Ala Lys Ser Lys Ala Gly Ile Ala Ile Ala Ile Val
 485 490 495
 Val Leu Val Ile Leu Gly Ile Phe Phe Leu Leu Ala Val Ile Tyr Tyr
 500 505 510
 Cys Ser Arg Val Arg Lys Thr Lys Pro Lys His Asp Tyr Pro Ala Thr
 515 520 525
 Thr Gly His Ser Ser Met Ala Tyr Val Ser
 530 535

<210> 427
 <211> 537
 <212> PRT
 <213> Avian pneumovirus

<220>
 <223> Avian pneumovirus fusion glycoprotein (F) gene,
 complete cds

<400> 427
 Met Ser Trp Lys Val Val Leu Leu Val Leu Ala Thr Pro Thr
 1 5 10 15
 Gly Gly Leu Glu Glu Ser Tyr Leu Glu Glu Ser Cys Ser Thr Val Thr
 20 25 30
 Arg Gly Tyr Leu Ser Val Leu Arg Thr Gly Trp Tyr Thr Asn Val Phe
 35 40 45
 Thr Leu Glu Val Gly Asp Val Glu Asn Leu Thr Cys Thr Asp Gly Pro
 50 55 60
 Ser Leu Ile Arg Thr Glu Leu Glu Leu Thr Lys Asn Ala Leu Glu Glu
 65 70 75 80
 Leu Lys Thr Val Ser Ala Asp Gln Leu Ala Lys Glu Ala Arg Ile Met
 85 90 95
 Ser Pro Arg Lys Ala Arg Phe Val Leu Gly Ala Ile Ala Leu Gly Val
 100 105 110
 Ala Thr Ala Ala Ala Val Thr Ala Gly Val Ala Ile Ala Lys Thr Ile
 115 120 125
 Arg Leu Glu Gly Glu Val Ala Ala Ile Lys Gly Ala Leu Arg Lys Thr
 130 135 140
 Asn Glu Ala Val Ser Thr Leu Gly Asn Gly Val Arg Val Leu Ala Thr
 145 150 155 160
 Ala Val Asn Asp Leu Lys Asp Phe Ile Ser Lys Lys Leu Thr Pro Ala
 165 170 175
 Ile Asn Arg Asn Lys Cys Asp Ile Ser Asp Leu Lys Met Ala Val Ser
 180 185 190
 Phe Gly Gln Tyr Asn Arg Arg Phe Leu Asn Val Val Arg Gln Phe Ser
 195 200 205
 Asp Asn Ala Gly Ile Thr Pro Ala Ile Ser Leu Asp Leu Met Thr Asp
 210 215 220
 Ala Glu Leu Val Arg Ala Val Ser Asn Met Pro Thr Ser Ser Gly Gln

225	230	235	240
Ile Asn Leu Met Leu Glu Asn Arg Ala Met Val Arg Arg Lys Gly Phe			
245	250	255	
Gly Ile Leu Ile Gly Val Tyr Gly Ser Ser Val Val Tyr Ile Val Gln			
260	265	270	
Leu Pro Ile Phe Gly Val Ile Asp Thr Pro Cys Trp Lys Val Lys Ala			
275	280	285	
Ala Pro Leu Cys Ser Gly Lys Asp Gly Asn Tyr Ala Cys Leu Leu Arg			
290	295	300	
Glu Asp Gln Gly Trp Tyr Cys Gln Asn Ala Gly Ser Thr Val Tyr Tyr			
305	310	315	320
Pro Asn Glu Glu Asp Cys Glu Val Arg Ser Asp His Val Phe Cys Asp			
325	330	335	
Thr Ala Ala Gly Ile Asn Val Ala Lys Glu Ser Glu Glu Cys Asn Arg			
340	345	350	
Asn Ile Ser Thr Thr Lys Tyr Pro Cys Lys Val Ser Thr Gly Arg His			
355	360	365	
Pro Ile Ser Met Val Ala Leu Ser Pro Leu Gly Ala Leu Val Ala Cys			
370	375	380	
Tyr Asp Gly Met Ser Cys Ser Ile Gly Ser Asn Lys Val Gly Ile Ile			
385	390	395	400
Arg Pro Leu Gly Lys Gly Cys Ser Tyr Ile Ser Asn Gln Asp Ala Asp			
405	410	415	
Thr Val Thr Ile Asp Asn Thr Val Tyr Gln Leu Ser Lys Val Glu Gly			
420	425	430	
Glu Gln His Thr Ile Lys Gly Lys Pro Val Ser Ser Asn Phe Asp Pro			
435	440	445	
Ile Glu Phe Pro Glu Asp Gln Phe Asn Ile Ala Leu Asp Gln Val Phe			
450	455	460	
Glu Ser Val Glu Lys Ser Gln Asn Leu Ile Asp Gln Ser Asn Lys Ile			
465	470	475	480
Leu Asp Ser Ile Glu Lys Gly Asn Ala Gly Phe Val Ile Val Ile Val			
485	490	495	
Leu Ile Val Leu Leu Met Leu Ala Ala Val Gly Val Gly Val Phe Phe			
500	505	510	
Val Val Lys Lys Arg Lys Ala Ala Pro Lys Phe Pro Met Glu Met Asn			
515	520	525	
Gly Val Asn Asn Lys Gly Phe Ile Pro			
530	535		

<210> 428

<211> 391

<212> PRT

<213> Turkey rhinotracheitis virus

<220>

<223> Turkey rhinotracheitis virus (strain CVL14/1)
attachment protien (G) mRNA, complete cds

<400> 428

Met Gly Ser Lys Leu Tyr Met Ala Gln Gly Thr Ser Ala Tyr Gln Thr			
1	5	10	15
Ala Val Gly Phe Trp Leu Asp Ile Gly Arg Arg Tyr Ile Leu Ala Ile			
20	25	30	
Val Leu Ser Ala Phe Gly Leu Thr Cys Thr Val Thr Ile Ala Leu Thr			
35	40	45	
Val Ser Val Ile Val Glu Gln Ser Val Leu Glu Glu Cys Arg Asn Tyr			
50	55	60	
Asn Gly Gly Asp Arg Asp Trp Trp Ser Thr Thr Gln Glu Gln Pro Thr			
65	70	75	80

Thr Ala Pro Ser Ala Thr Pro Ala Gly Asn Tyr Gly Gly Leu Gln Thr
 85 90 95
 Ala Arg Thr Arg Lys Ser Glu Ser Cys Leu His Val Gln Ile Ser Tyr
 100 105 110
 Gly Asp Met Tyr Ser Arg Ser Asp Thr Val Leu Gly Gly Phe Asp Cys
 115 120 125
 Met Gly Leu Leu Val Leu Cys Lys Ser Gly Pro Ile Cys Gln Arg Asp
 130 135 140
 Asn Gln Val Asp Pro Thr Ala Leu Cys His Cys Arg Val Asp Leu Ser
 145 150 155 160
 Ser Val Asp Cys Cys Lys Val Asn Lys Ile Ser Thr Asn Ser Ser Thr
 165 170 175
 Thr Ser Glu Pro Gln Lys Thr Asn Pro Ala Trp Pro Ser Gln Asp Asn
 180 185 190
 Thr Asp Ser Asp Pro Asn Pro Gln Gly Ile Thr Thr Ser Thr Ala Thr
 195 200 205
 Leu Leu Ser Thr Ser Leu Gly Leu Met Leu Thr Ser Lys Thr Gly Thr
 210 215 220
 His Lys Ser Gly Pro Pro Gln Ala Leu Pro Gly Ser Asn Thr Asn Gly
 225 230 235 240
 Lys Thr Thr Thr Asp Arg Glu Pro Gly Pro Thr Asn Gln Pro Asn Ser
 245 250 255
 Thr Thr Asn Gly Gln His Asn Lys His Thr Gln Arg Met Thr Pro Pro
 260 265 270
 Pro Ser His Asp Asn Thr Arg Thr Ile Leu Gln His Thr Thr Pro Trp
 275 280 285
 Glu Lys Thr Phe Ser Thr Tyr Lys Pro Thr His Ser Pro Thr Asn Glu
 290 295 300
 Ser Asp Gln Ser Leu Pro Thr Thr Gln Asn Ser Ile Asn Cys Glu His
 305 310 315 320
 Phe Asp Pro Gln Gly Lys Glu Lys Ile Cys Tyr Arg Val Gly Ser Tyr
 325 330 335
 Asn Ser Asn Ile Thr Lys Gln Cys Arg Ile Asp Val Pro Leu Cys Ser
 340 345 350
 Thr Tyr Ser Thr Val Cys Met Lys Thr Tyr Tyr Thr Glu Pro Phe Asn
 355 360 365
 Cys Trp Arg Arg Ile Trp Arg Cys Leu Cys Asp Asp Gly Val Gly Leu
 370 375 380
 Val Glu Trp Cys Cys Thr Ser
 385 390

<210> 429

<211> 414

<212> PRT

<213> rhinotracheitis virus

<220>

<223> Turkey rhinotracheitis virus (strain 6574)
attachment protein (G)

<400> 429

Met Gly Ser Glu Leu Tyr Ile Ile Glu Gly Val Ser Ser Ser Glu Ile
 1 5 10 15
 Val Leu Lys Gln Val Leu Arg Arg Ser Gln Lys Ile Leu Leu Gly Leu
 20 25 30
 Val Leu Ser Ala Leu Gly Leu Thr Leu Thr Ser Thr Ile Val Ile Ser
 35 40 45
 Ile Cys Ile Ser Val Glu Gln Val Lys Leu Arg Gln Cys Val Asp Thr
 50 55 60
 Tyr Trp Ala Glu Asn Gly Ser Leu His Pro Gly Gln Ser Thr Glu Asn
 65 70 75 80

Thr Ser Thr Arg Gly Lys Thr Thr Lys Asp Pro Arg Arg Leu Gln
 85 90 95
 Ala Thr Gly Ala Gly Lys Phe Glu Ser Cys Gly Tyr Val Gln Val Val
 100 105 110
 Asp Gly Asp Met His Asp Arg Ser Tyr Ala Val Leu Gly Gly Val Asp
 115 120 125
 Cys Leu Gly Leu Leu Ala Leu Cys Glu Ser Gly Pro Ile Cys Gln Gly
 130 135 140
 Asp Thr Trp Ser Glu Asp Gly Asn Phe Cys Arg Cys Thr Phe Ser Ser
 145 150 155 160
 His Gly Val Ser Cys Cys Lys Pro Lys Ser Lys Ala Thr Thr Ala
 165 170 175
 Gln Arg Asn Ser Lys Pro Ala Asn Ser Lys Ser Thr Pro Pro Val His
 180 185 190
 Ser Asp Arg Ala Ser Lys Glu His Asn Pro Ser Gln Gly Glu Gln Pro
 195 200 205
 Arg Arg Gly Pro Thr Ser Ser Lys Thr Thr Ile Ala Ser Thr Pro Ser
 210 215 220
 Thr Glu Asp Thr Ala Lys Pro Thr Ile Ser Lys Pro Lys Leu Thr Ile
 225 230 235 240
 Arg Pro Ser Gln Arg Gly Pro Ser Gly Ser Thr Lys Ala Ala Ser Ser
 245 250 255
 Thr Pro Ser His Lys Thr Asn Thr Arg Gly Thr Ser Lys Thr Thr Asp
 260 265 270
 Gln Arg Pro Arg Thr Gly Pro Thr Pro Glu Arg Pro Arg Gln Thr His
 275 280 285
 Ser Thr Ala Thr Pro Pro Pro Thr Thr Pro Ile His Lys Gly Arg Ala
 290 295 300
 Pro Thr Pro Lys Pro Thr Thr Asp Leu Lys Val Asn Pro Arg Glu Gly
 305 310 315 320
 Ser Thr Ser Pro Thr Ala Ile Gln Lys Asn Pro Thr Thr Gln Ser Asn
 325 330 335
 Leu Val Asp Cys Thr Leu Ser Asp Pro Asp Glu Pro Gln Arg Ile Cys
 340 345 350
 Tyr Gln Val Gly Thr Tyr Asn Pro Ser Gln Ser Gly Thr Cys Asn Ile
 355 360 365
 Glu Val Pro Lys Cys Ser Thr Tyr Gly His Ala Cys Met Ala Thr Leu
 370 375 380
 Tyr Asp Thr Pro Phe Asn Cys Trp Arg Arg Thr Arg Arg Cys Ile Cys
 385 390 395 400
 Asp Ser Gly Gly Glu Leu Ile Glu Trp Cys Cys Thr Ser Gln
 405 410

<210> 430

<211> 46

<212> PRT

<213> human metapneumovirus

<220>

<223> Postulated HRA sequence of strain NL1/00

<400> 430

Lys Thr Ile Arg Leu Glu Ser Glu Val Thr Ala Ile Lys Asn Ala Leu
 1 5 10 15
 Lys Lys Thr Asn Glu Ala Val Ser Thr Leu Gly Asn Gly Val Arg Val
 20 25 30
 Leu Ala Thr Ala Val Arg Glu Leu Lys Asp Phe Val Ser Lys
 35 40 45

<210> 431

<211> 46

<212> PRT

<213> human metapneumovirus

<220>

<223> Postulated HRA sequence of strain NL17/00

<400> 431

Lys	Thr	Ile	Arg	Leu	Glu	Ser	Glu	Val	Thr	Ala	Ile	Lys	Asn	Ala	Leu
1				5				10						15	
Lys	Thr	Thr	Asn	Glu	Ala	Val	Ser	Thr	Leu	Gly	Asn	Gly	Val	Arg	Val
		20					25					30			
Leu	Ala	Thr	Ala	Val	Arg	Glu	Leu	Lys	Asp	Phe	Val	Ser	Lys		
		35				40					45				

<210> 432

<211> 46

<212> PRT

<213> human metapneumovirus

<220>

<223> Postulated HRA sequence of strain NL1/99

<400> 432

Lys	Thr	Ile	Arg	Leu	Glu	Ser	Glu	Val	Asn	Ala	Ile	Lys	Gly	Ala	Leu
1				5				10					15		
Lys	Gln	Thr	Asn	Glu	Ala	Val	Ser	Thr	Leu	Gly	Asn	Gly	Val	Arg	Val
		20					25					30			
Leu	Ala	Thr	Ala	Val	Arg	Glu	Leu	Lys	Glu	Phe	Val	Ser	Lys		
		35				40					45				

<210> 433

<211> 46

<212> PRT

<213> human metapneumovirus

<220>

<223> Postulated HRA sequence of strain NL1/94

<400> 433

Lys	Thr	Ile	Arg	Leu	Glu	Ser	Glu	Val	Asn	Ala	Ile	Lys	Gly	Ala	Leu
1				5				10					15		
Lys	Thr	Thr	Asn	Glu	Ala	Val	Ser	Thr	Leu	Gly	Asn	Gly	Val	Arg	Val
		20					25					30			
Leu	Ala	Thr	Ala	Val	Arg	Glu	Leu	Lys	Glu	Phe	Val	Ser	Lys		
		35				40					45				

<210> 434

<211> 29

<212> PRT

<213> human metapneumovirus

<220>

<223> Postulated HRB sequence of strain NL1/00

<400> 434

Asn	Val	Ala	Leu	Asp	Gln	Val	Phe	Glu	Ser	Ile	Glu	Asn	Ser	Gln	Ala
1				5				10					15		
Leu	Val	Asp	Gln	Ser	Asn	Arg	Ile	Leu	Ser	Ser	Ala	Glu			
				20				25							

<210> 435

<211> 29

<212> PRT

<213> human metapneumovirus

<220>

<223> Postulated HRB sequence of strain NL17/00

<400> 435

Asn Val Ala Leu Asp Gln Val Phe Glu Asn Ile Glu Asn Ser Gln Ala
1 5 10 15
Leu Val Asp Gln Ser Asn Arg Ile Leu Ser Ser Ala Glu
20 25

<210> 436

<211> 29

<212> PRT

<213> human metapneumovirus

<220>

<223> Postulated HRB sequence of strain NL1/99

<400> 436

Asn Val Ala Leu Asp Gln Val Phe Glu Ser Ile Glu Asn Ser Gln Ala
1 5 10 15
Leu Val Asp Gln Ser Asn Lys Ile Leu Asn Ser Ala Glu
20 25

<210> 437

<211> 29

<212> PRT

<213> human metapneumovirus

<220>

<223> Postulated HRB sequence of strain NL1/94

<400> 437

Asn Val Ala Leu Asp Gln Val Phe Glu Ser Ile Glu Asn Ser Gln Ala
1 5 10 15
Leu Val Asp Gln Ser Asn Lys Ile Leu Asn Ser Ala Glu
20 25